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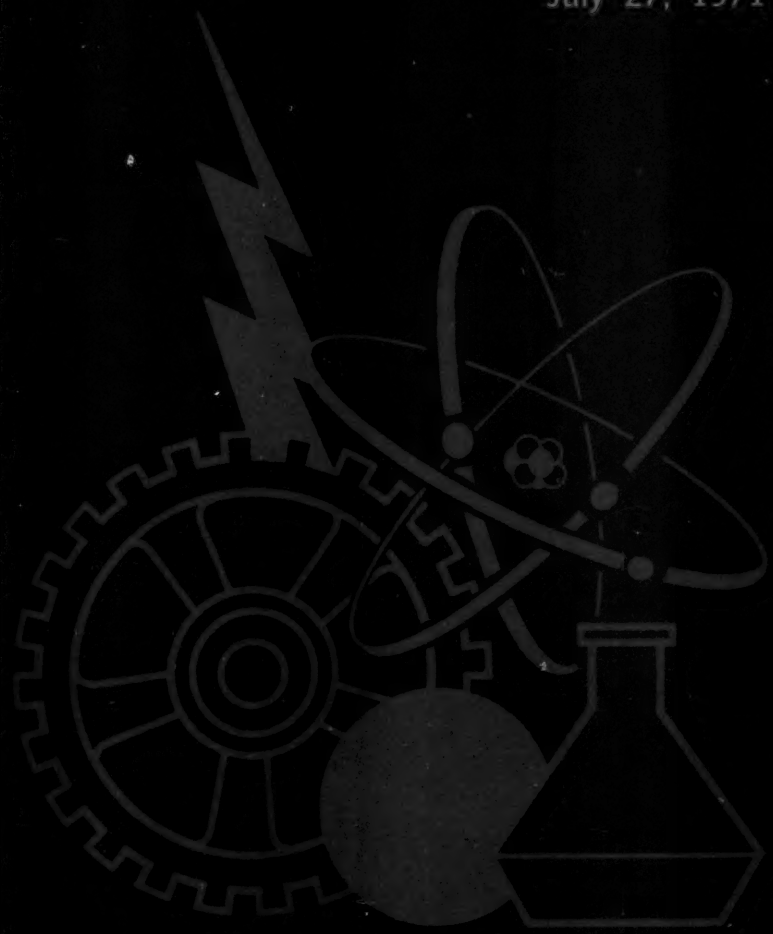
PATENTS

July 27, 1971



U. S. DEPARTMENT OF COMMERCE

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PATENTS

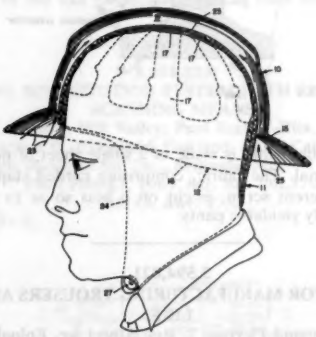
GRANTED JULY 27, 1971

GENERAL AND MECHANICAL

3,594,813
PROTECTIVE DEVICE
Roger S. Sanderson, 24662 Santa Clara Ave., Dana Point, Calif.
Filed July 10, 1968, Ser. No. 743,717
Int. Cl. A42b *1/18*
U.S. Cl. 2—2 8 Claims

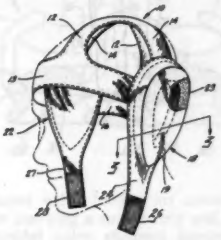
A device for protecting body portions which are exposed to large amounts of the radiation from the sun. The device is molded into the shape of the body portion from a material which is form-retaining, tear-resistant, soft, flexible and lightweight. An adhesive is provided on the inner surfaces of the device. The device is ventilated by through-pores or by the manner in which the adhesive is distributed on the inner surfaces.

3,594,814
SAFETY HAT LINER AND ASSEMBLY
Walter E. Schuessler, 800 Redbird Lane, Wilmette, Ill., and Herbert R. Wichman, 1109 S. Lincoln, Park Ridge, Ill.
Filed Jan. 2, 1968, Ser. No. 694,957
Int. Cl. A42b *3/00*
U.S. Cl. 2—3 8 Claims



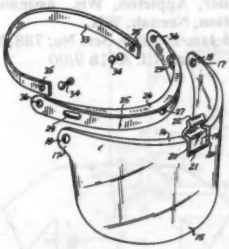
A liner which, in combination with a hard hat and a harness, provides cold weather protection for one who must wear such a hat or helmet because of the hazardous nature of his work. The liner has a crown portion which extends over the harness within the interior of the hat and a depending flap portion which may, in cold weather, be extended downwardly between the headband of the harness and the rim of the hat. The flap portion may be folded upwardly into the interior of the hat and about the lower rear edge portion of the band when cold weather protection for the ears and neck of a wearer is not required.

3,594,815
WRESTLING HELMET
John G. Reese, Kingston, Pa., assignor to Spanjian Sportswear, Pasadena, Calif.
Filed May 21, 1969, Ser. No. 826,376
Int. Cl. A42b *1/08*
U.S. Cl. 2—3 10 Claims



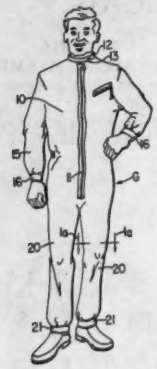
A wrestler's helmet is made from a continuous piece of knitted fabric which is elastic in mutually perpendicular directions.

3,594,816
SAFETY HELMET FACE SHIELD
Daniel D. Webb, Birmingham, and Dennis F. Raney, Walled Lake, both of, Mich., assignors to American Safety Equipment Corporation of Michigan, Detroit, Mich.
Filed Dec. 18, 1969, Ser. No. 886,255
Int. Cl. A61f *9/04*
U.S. Cl. 2—10 6 Claims



A safety helmet transparent protective face shield pivotally connected at its opposite, upper ends to a mounting band formed of slightly resilient material and having female snap fastener forming openings for connection to male snap fastener halves secured to the front of a safety helmet. A latching tab, formed by a pair of spaced apart slits in the upper edge of the shield, has a groove on its rear surface receiving a forwardly directed flange formed on the band for releasably latching the shield in vertical position on the front of the helmet.

3,594,817
ONE-PIECE GARMENT
Walter J. Kelly, 22-74 46th St., Long Island, N.Y.
Filed June 27, 1969, Ser. No. 837,233
Int. Cl. A41d 13/02
U.S. Cl. 2—16 2 Claims

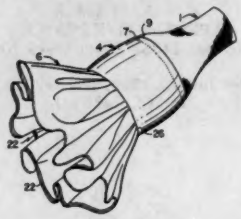


A one-piece garment or suit of composition material, e.g. heavy gauge fabric covered with plastic or rubberized compound for use particularly by motorcyclists. The garment is roomy enough to allow the wearer to don and remove it readily. A slide fastener front is provided and the collar has snap fasteners. The sleeves also have slide fasteners running approximately 6 inches from the wrist cuff. The legs have a flared cuff to permit easy access and include small flaps and snaps for folding and securing about the ankle. The waist includes an adjustable belt of the same fabric as the garment spanning the back but free at the front. Optionally elbow and knee protectors made of cushion pockets filled with air or foam rubber are provided of more durable material than the body of the garment which are removably carried and held in place by elastic bands, or such protectors may line the entire garment.

3,594,818
FOLDED BELT PACKAGE FOR HOSPITAL GOWNS
Thomas H. Planner, Appleton, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.
Filed Jan. 2, 1969, Ser. No. 788,377
Int. Cl. A41b 9/00
U.S. Cl. 2—114 5 Claims

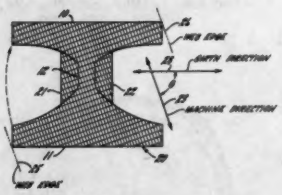
A folded belt package for disposable hospital gowns, in which the belt is maintained in a compact condition until the gown has been put on and the user is ready to use the belt.

3,594,819
SLEEVELET
Robert Guy Mullins, and Vadis Louise Mullins, both of 316 Bell Ave., Dyersburg, Tenn.
Filed Sept. 5, 1969, Ser. No. 855,486
Int. Cl. A41d
U.S. Cl. 2—170 6 Claims



A sleevelet which can be worn as a false cuff together with a short-sleeve shirt is disclosed. The sleevelet provides a dressed-up look and gives an observer the appearance that the user is wearing a long-sleeve shirt. The sleevelet or "false cuff" comprises a cuff means or section and a forearm gripping means which are preferably attached together by stitching means.

3,594,820
DISPOSABLE PANTY
Marion A. McCurry, Appleton, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.
Filed May 16, 1969, Ser. No. 825,156
Int. Cl. A41b 9/04
U.S. Cl. 2—224 6 Claims

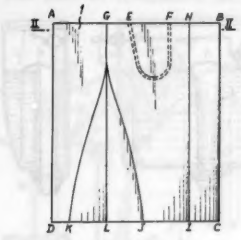


A disposable panty is made of a single sheet of nonwoven fabric material. The fabric, comprising carded staple fibers and an adherent scrim, is cut on a bias so as to afford a dimensionally yieldable panty.

3,594,821
METHOD FOR MANUFACTURING TROUSERS AND THE LIKE
Claude Raymond Pierron, 7, Rue Albert Ier, Epinal, Vosges, France
Filed Nov. 5, 1968, Ser. No. 773,503
Claims priority, application France, Nov. 6, 1967, Feb. 20, 1968, Oct. 15, 1968, 127,079;140,502;170,010
Int. Cl. A41d 1/06, 13/02
U.S. Cl. 2—227 58 Claims

A method of manufacturing trousers consisting in superposing at least two layers of fabric of equal width corresponding respectively to the legs of a pair of trousers; bringing said layers into engaging relationship and assembling them locally by their confronting faces at least along the back medial seal line and the fork perineal line connecting with the latter; forming two flattened blanks of tubular legs

by superposing at least two additional layers and complementary longitudinal assembling thereof by pairs along at least



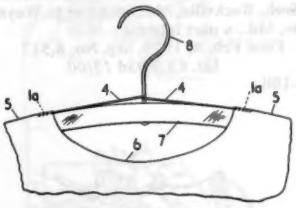
the rear crease line, and severing the portions to be removed and lying outside the assembling lines.

3,594,822

CLOTHING MANUFACTURE ACCESSORY

David Michael Levitt, 121 Cholmley Gardens, Fortune Green Road, London N.W. 6, England

Filed Jan. 28, 1969, Ser. No. 794,534
Claims priority, application Great Britain, Jan. 29, 1968, 4414/68
Int. Cl. A41d *27/22*
U.S. Cl. 2—271 **2 Claims**



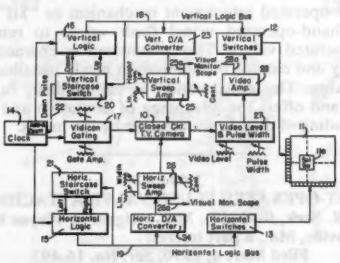
A prefabricated loop and the like comprising a length of tape or the like and a length of fine thread, extruded plastic filament or the like looped and with its ends secured to the tape.

3,594,823

VISUAL SUBSTITUTION SYSTEM WITH RECEPTOR SCANNING MEANS

Carter C. Collins, Mill Valley; Paul Bach-Y-Rita, Mill Valley, and Gordon W. Holmlund, Oakland, all of, Calif., assignors to Patent Management, Inc., Bethesda, Md.

Filed Feb. 11, 1969, Ser. No. 798,379
Int. Cl. A61f *9/00*
U.S. Cl. 3—1 **10 Claims**



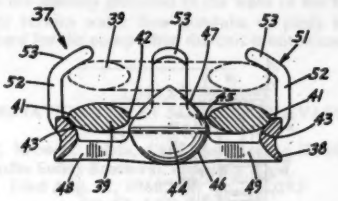
A tactile image converter for blind subjects comprises a quasi-random digitally swept vidicon camera tube, and an orthogonal logical switching matrix to connect sequentially each element of the vidicon photocathode surface to the corresponding element of a polarized solenoid stimulator matrix in contact with the subject's skin. The matrix acts as a mechanical image projector to impress a two-dimensional, vibrating facsimile of the outlines of a visible object onto a large area of skin.

3,594,824

TOROIDAL HEART VALVE

Ahmad Aref Nakib, Beirut, Lebanon, assignor to Regents of the University of Minnesota, Minneapolis, Minn.

Continuation-in-part of application Ser. No. 512,923, Dec. 10, 1965, now Patent No. 3,438,894. This application Apr. 14, 1969, Ser. No. 843,876
Int. Cl. A61f *1/22;* **F16k** *15/08, 15/14*
U.S. Cl. 3—1 **12 Claims**



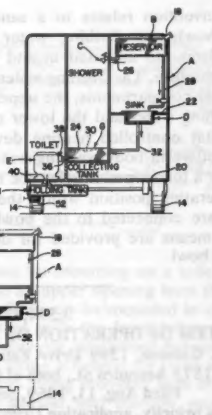
A toroidal heart valve having an annular base with an outer groove for carrying a suture ring and a central circular opening. A toroidal valve element having a central hole selectively moves relative to the base to open and closed positions. Located in the central area of the circular opening of the base is a center member having an outer continuous wall cooperating with the inner peripheral surface of the valve element when the valve element is in the closed position to restrict the flow of fluid in one direction through the opening in the base. An open cage secured to the base having a plurality of legs and inwardly turned fingers limits and directs the free floating movement of the valve element toward and away from the base.

3,594,825

WATER CIRCULATION SYSTEM

James S. Reid, Hudson, Ohio, assignor to The Standard Products Company, Cleveland, Ohio

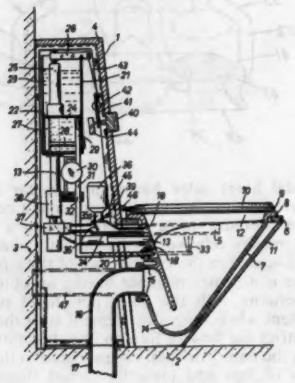
Filed Feb. 19, 1969, Ser. No. 800,496
Int. Cl. A47k *4/00;* **A41b** *9/00*
U.S. Cl. 4—2 **9 Claims**



A water circulation system for a human conveyance, such as a camping trailer or boat, includes a fresh water storage tank for supplying water to a wash basin or shower. The con-

veyance includes a water flush toilet and means is provided for directing drain water from the wash basin or shower to the inlet of the toilet.

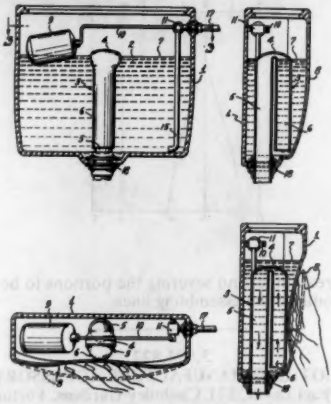
3,594,826
SANITARY CLOSET
Hans Maurer, Rietholzstrasse 6, Zollikerberg-Zurich, Switzerland
Filed Mar. 26, 1968, Ser. No. 716,096
Claims priority, application Switzerland, Mar. 31, 1967, 4549/67
Int. Cl. A47k *3/22*
U.S. Cl. 4—7 **12 Claims**



The invention relates to a sanitary closet in which the closet bowl, the flushing water tank and all operating mechanisms are mounted in and supported by an encased frame structure. The flushing water tank is divided into upper and lower compartments, the upper compartment containing the flushing water and the lower compartment containing a thermostat controlled heating device for preparation of a supply of warm body washing water which is delivered by a pump to a telescoped nozzle tube movable by water pressure into operating position within the bowl. Suction ventilator means are connected to the bowl for removing odors and blower means are provided for delivering warm drying air into the bowl.

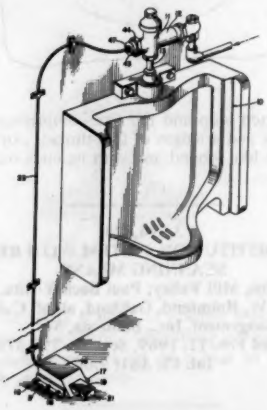
3,594,827
SYSTEM OF OPERATION OF TANKS OR THE LIKE
Julio C. Giacosa, 1399 Drive Estrazulas St., and Abel Hofman, 1573 Acapulco St., both of Montevideo, Uruguay
Filed Aug. 11, 1969, Ser. No. 849,217
Claims priority, application Uruguay, May 7, 1969, 17526
Int. Cl. E03d *1/10*
U.S. Cl. 4—48 **6 Claims**

A tank having a flexible wall portion and a discharge siphon primable when the level of liquid in the tank exceeds a predetermined level, whereby mechanical pressure on the



flexible portion raises the liquid level and primes the siphon to discharge the liquid from the tank.

3,594,828
FLUSH VALVE OPERATING MECHANISM
Everett R. Seek, Rockville, Md., assignor to Wayne Musgrove, Hyattsville, Md., a part interest
Filed Feb. 4, 1970, Ser. No. 8,517
Int. Cl. E03d *13/00*
U.S. Cl. 4—108 **10 Claims**

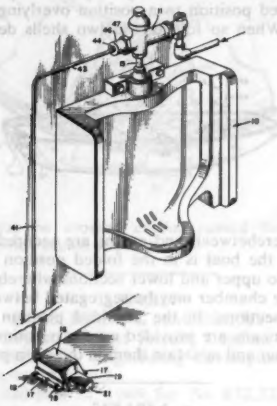


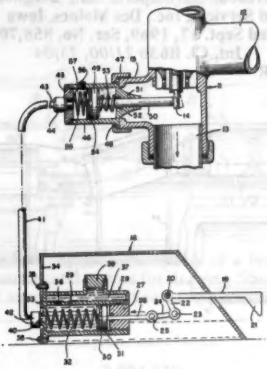
A foot-operated attachment mechanism or "kit" for converting hand-operated urinal flush valves to remote foot pedal operated valves. The attachment is characterized by simplicity and ease of installation on newly installed or existing fixtures. The construction is economical, rugged and durable and offers the advantage of sanitation and lessening the spreading of disease transmitted by the hands.

3,594,829
FOOT-OPERATED FLUSH VALVE ATTACHMENT
Everett R. Seek, Rockville, Md., assignor to Wayne Musgrove, Hyattsville, Md., a part interest
Filed Mar. 4, 1970, Ser. No. 16,493
Int. Cl. E03d *13/00*
U.S. Cl. 4—108 **8 Claims**

A foot pedal actuated attachment kit for urinal and commode flush valves features a closed hydraulic system inter-

connecting the valve element to be unseated and the foot pedal operator. The device is characterized by simplicity of construction and ease of installation on new or existing





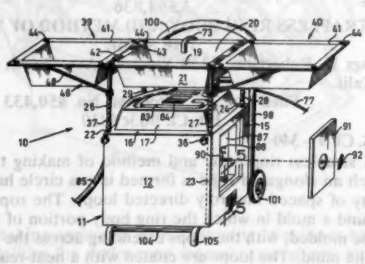
plumbing fixtures. The device offers the advantage of sanitation through lessening the spread of disease transmitted by the hands.

3,594,830

PORTABLE SINKS

George K. Clifton, 105 Christie St., Toronto, Ontario, Canada

Filed Sept. 3, 1969, Ser. No. 854,958
Int. Cl. E03c 1/18
U.S. Cl. 4—187 13 Claims



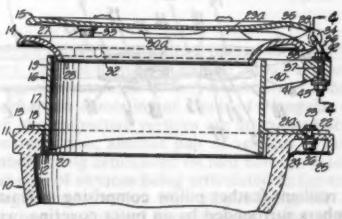
A portable sink unit particularly intended for use by campers comprises a water tank and a water basin supported by a basin-supporting frame carried at the upper ends of a number of upstanding support rods slidably mounted within bores extending downwardly in the sidewalls of the water tank and securable in any desired vertical position. When not in use, the aforementioned supporting frame is disposed above the water basin with the upstanding rods extending through openings in a peripheral flange of the basin so as to hold the basin against the top surface of the tank. The unit may also comprise side basins which can function as dish drainers or rinsing bowls and these side basins are usefully supported by arms pivotally mounted on the upstanding rods for movement between laterally extending supporting positions and retracted stowed positions. The side basins can be stowed in nesting disposition with the water basing against the top surface of the tank. The water tank also usefully comprises a built in electrically operated water pump and compartments or recesses are usefully provided in the walls of the tank for housing the various water flow conduits or pipes and the electrical cord for the pump when the unit is not in use.

3,594,831

COMBINATION TOILET SEAT AND ELEVATOR THEREFOR

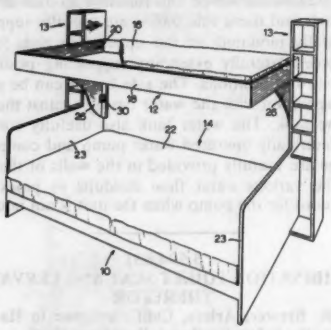
William R. Brewer, Arleta, Calif., assignor to Hamilton C. deJong (dba Safety Brothers), Pasadena, Calif.

Filed Aug. 21, 1968, Ser. No. 754,293
Int. Cl. A47k 13/00
U.S. Cl. 4—237 3 Claims



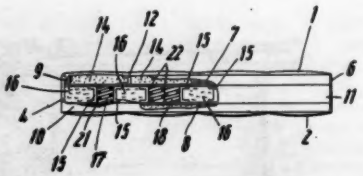
An occupant seat structure for mounting on a toilet bowl in operative association with an upper opening brim thereof, including an annular seat which can be mounted in one assembly for direct cooperation with the bowl brim, and in another assembly with an elevator positioned between the seat and brim, the elevator being arranged for fixed securement to the bowl, and further being provided with brackets for hingedly mounting the annular seat thereon, mounting pivots for the seat being selectively reversible for adjustably changing the relative for-and-aft position of the annular seat, particularly when changing from one assembly to the other. An important feature of the annular seat resides in the provision of side hand grips between which a hinged cover or lid is movable to a closed position.

3,594,832
CONVERTIBLE BUNK/CHESTERFIELD
Abram Izak Bryks, Toronto, Ontario, Canada, assignor to June Marie Bulmer, Clarkson, Onatario, Canada and Golda Bryks, Toronto, Ontario, Canada
Filed June 30, 1969, Ser. No. 837,706
Int. Cl. A47c *17/40*
U.S. Cl. 5—9 **4 Claims**



A Convertible Bunk/chesterfield, i.e. a furniture piece which is readily and easily convertible from chesterfield to bunk and vice versa, in which spring loaded holding means are provided to support the outer edge of the upper of the bunk portions, together with drawing means to overcome the spring force of the holding means. The upper bunk portion is swingable near its back edge upon release of the holding means to assume a near vertical position which is the back of the chesterfield. The upper bunk portion is replaced to its upper position manually and the springloaded holding means automatically take their holding position when the upper bunk is in its upper position.

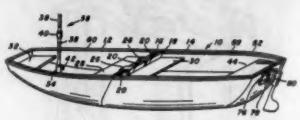
3,594,833
FEATHER SPRING PILLOW
Manfred Richter, Wehr, Baden-Wurttemberg, Germany, assignor to Manfred Richter Daunenkissen-Und Bettenfabrik, Wehr, Baden, Germany
Filed Apr. 17, 1969, Ser. No. 816,936
Claims priority, application Germany, Apr. 19, 1968, P 17 78 327.6
Int. Cl. A47c *27/00*; A47q *9/00*
U.S. Cl. 5—341 **5 Claims**



A resilient feather pillow comprising at least two internal chambers surrounded by an outer covering, with one of the chambers containing feathers and the other chamber being subdivided into a number of compartments which are arranged to alternately contain prestressed springs and yieldable elastic material. After compression of the pillow the prestressed springs serve to cause the pillow to assume its original shape and softness.

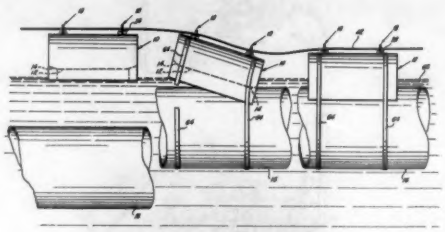
3,594,834
FOLDING BOAT
Robert D. Steensen, 103 Leslie Drive, Monroeville, Pa.
Filed July 11, 1969, Ser. No. 840,923
Int. Cl. B63b *7/04*
U.S. Cl. 9—2 **6 Claims**

Disclosed is a folding boat useful as a sailboat, motorboat or a rowboat. The boat comprises a boat hull comprising forward and rear shells each having similar flat transverse partitions at their adjacent ends in substantially the midportion of the hull. The partitions are pivotally connected together whereby one of the shells may be pivoted upwardly from a fully extended position to a position overlying the other of the shells. When so folded, the two shells define a closed



chamber therebetween and means are secured between the shells when the boat is in the folded position to divide the chamber into upper and lower sections whereby cargo to be stored in the chamber may be segregated between the upper and lower sections. In the unfolded position of the boat, spring-clip means are provided on the partitions to lock the shells together and maintain them in the open position.

3,594,835
FLOAT DEVICE FOR PIPELINES
William W. Wilson, Shreveport, La., assignor to Pipeline Products and Services, Inc., Des Moines, Iowa
Filed Sept. 17, 1969, Ser. No. 858,706
Int. Cl. B63b *21/00*, *35/04*
U.S. Cl. 9—8 R **18 Claims**

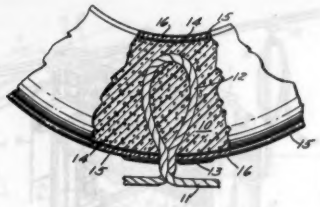


A float to be strapped onto a section of pipe to be used in a pipeline for the purpose of facilitating the laying of the pipe in a body of water. The float is preferably of a solid buoyant material such as polystyrene and has an arcuate undercut so it will fit the pipe like a saddle. The edge at each end of the undercut is bevelled so that when the strap on one end is released while the pipe is in the water, the float will tilt on the bevel at the opposite end and automatically release from the other strap. The floats can be joined by a cord attached either to suitable hooks on the floats or extending through a longitudinal passageway in each float for expediting their retrieval when released from the pipes. The floats are adaptable to pipes of different diameters and may be stacked when not in use.

3,594,836
STRAPLESS RING BUOY AND METHOD OF MAKING THE SAME
James H. Robertson, 5238 Vineland Ave., North Hollywood, Calif.
Filed Aug. 15, 1969, Ser. No. 850,433
Int. Cl. B63c *9/10*
U.S. Cl. 9—340 **9 Claims**

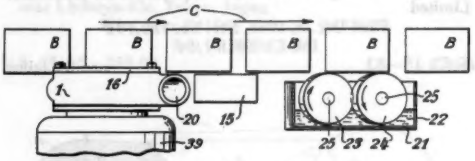
A strapless ring buoy and method of making the same in which an elongated rope is formed into a circle having a plurality of spaced inwardly directed loops. The rope is placed around a mold in which the ring body portion of the buoy is to be molded, with the loops extending across the midportion of the mold. The loops are coated with a heat-reacting adhesive composition so that the expanded polystyrene foam material forming the ring is bonded to the loops at the same time and through the same means used for molding the ring. The loops are held within the ring securely to attach the rope without straps or other fastening means of any kind either in-

side or outside of the ring. The portions of the rope between the loops substantially encircle the ring. The strands forming



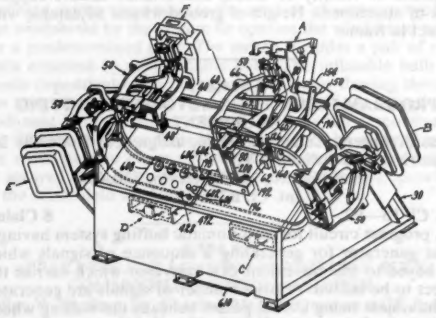
the loops may be crossed and/or passed through eyelet fittings to provide added strength.

3,594,837
BOOK BINDING MACHINERY
Lionel John Bryant Rushent French, London, England, assignor to The Sulby Engineering Development Company Limited, Surrey, England
Filed June 11, 1969, Ser. No. 832,228
Claims priority, application Great Britain, June 19, 1968, 29096/68
Int. Cl. B42c *19/00*; B26d *7/06*
U.S. Cl. 11—1 AD **2 Claims**



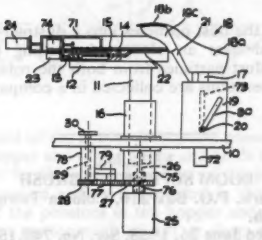
A machine for preparing the sheets of a book for binding comprises a cutter and means for drawing fiber end loosened by the cutter away from the sheets to provide a key for adhesive.

3,594,838
LASTING MACHINES
James R. Stewart, Salem, and Robert F. Gorini, Beverly, both of, Mass., assignors to USM Corporation, Boston, Mass.
Filed May 28, 1970, Ser. No. 41,384
Int. Cl. A43d
U.S. Cl. 12—1 **17 Claims**



A shoemaking apparatus with a plurality of stations having instrumentalities for performing separate operations, including one for positioning an upper on a last, and a carrier guided for movement to present the last and positioned upper thereon, in succession, to the operating stations and having devices for clamping the positioned upper to the last and on the carrier, during movement of the carrier from station to station, and also during operation of the operating instrumentalities at each station.

3,594,839
SHOE LASTING MACHINES
Frank Gordon Bailey, Kettering, England, assignor to Ralphs Unified Limited, Leicester, England
Filed Aug. 23, 1968, Ser. No. 764,365
Claims priority, application Great Britain, Aug. 25, 1967, 39134/67
Int. Cl. A43d *21/00, 23/00, 29/00*
U.S. Cl. 12—10.5 **5 Claims**



Means for lasting the upper of a shoe in the use of which the shoe upper is presented to a last or form and positioned with a predetermined width of lasting margin projecting from the boundary of the last or form, the upper is then held firmly in place against the boundary edge of the last or form whilst the upper margin is turned over and lasted by adhesive against an insole on the last or form, and after the lasting margin has been so turned over the upper material has shaping stress applied to it.

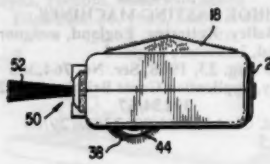
3,594,840
SCISSORS BRIDGE AND ITS CONTROL DEVICE
Pierre Loustalet, and Claude Leclercq, both of Tarbes, France, assignors to French State, represented by the Minister of Armed Forces, Ministerial Delegation for Armaments, Technical Direction of Land Weapons, Manufacturing Workshop of Tarbes, Paris, France
Filed Feb. 27, 1969, Ser. No. 802,911
Claims priority, application France, Mar. 1, 1968, 141,908
Int. Cl. E01d *1/00*
U.S. Cl. 14—1 **6 Claims**

A scissors-type bridge comprising a pair of identical foldable half-spans hingedly interconnected about a common transverse axis, characterized in that it comprises a built-in unfolding mechanism consisting of a pair of triangular members of which two respective vertices are articulated about a common transverse axis, another pair of vertices of said triangular members being articulated on said half-spans respectively, the last pair of vertices being articulated to the ends of a pair of longitudinal traction bars respectively, the other ends of these two longitudinal traction bars being provided with means for coupling them to a control device carried by the launching vehicle and adapted to cause the longitudinal sliding movement of the traction bar to which it is coupled, in one or the other direction, so as to open or close the bridge respectively.

3,594,841
CLEANING BRUSH DEVICE
Raymond Kieves, 1707 Inkster Blvd., Winnipeg, Canada
Filed Mar. 17, 1970, Ser. No. 20,233
Int. Cl. A47l *11/33*
U.S. Cl. 15—4 **5 Claims**

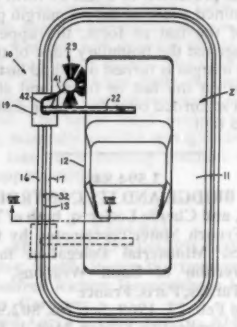
A cleaning brush device having a rectangular housing with a roller brush rotatably mounted on the bottom wall. The ro-

tary brush protrudes through a bottom opening to perform a carpet sweeper type action. The device also has a combined brush and sponge implement removably mounted in a longitudinal recess of a sidewall. Either end of the implement is



used to sweep the dust particles into a dustpan which is hingedly mounted over an elongated opening in the other sidewall. The dust particles from both the rotary brush and the dustpan operations are collected in a compartment of the housing.

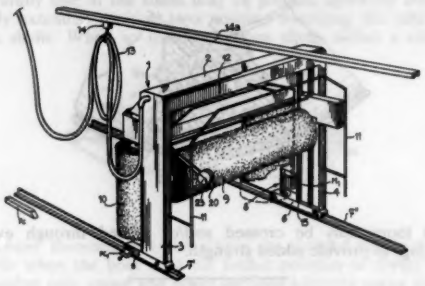
3,594,842
BOOM SUPPORTED BRUSH
Gaylord J. Clark, P.O. Box 216, Coloma Township, Berrien County, Mich.
Filed June 26, 1968, Ser. No. 740,151
Int. Cl. B60s *3/04*
U.S. Cl. 15—21 **6 Claims**



An upright post and attached boom are supported for movement along a path substantially around a zone on a surface for supporting a motor vehicle. The post and boom support spray nozzles connected to a source of liquid under pressure and arranged to direct liquid continuously at a vehicle supported in said zone as said post moves along said path. Brush means are mounted upon the post and/or boom and continuously urged against the surfaces of the vehicle toward which the liquid is discharged.

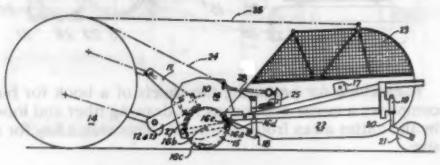
3,594,843
AUTOMATIC PLANT FOR WASHING VEHICLES
Bruno Sesia, and Carlo Sesia, both of 31 Strada Statale, Occimiano, Alessandria, Italy
Continuation-in-part of application Ser. No. 638,342, May 15, 1967, now abandoned. This application Nov. 5, 1968, Ser. No. 773,558
Int. Cl. B60s *3/06*
U.S. Cl. 15—21 **22 Claims**

An automatic plant for washing motor vehicles includes a portal frame carrying a movable horizontal brush, a set of movable vertical brushes, and sprayers thereon. The portal frame and vehicle are moved relative to one another to effect the washing cycle while the brushes contact the surface of the vehicle. The horizontal brush repeatedly scrubs the front and rear end of the vehicle and is mounted such that it will provide a constant downward force and will follow the contour of the vehicle. The vertical brushes are together at the start and finish of the washing in front and rear of the vehicle but are moved apart a distance suitable to the width of the



vehicle and are biased against the sides of the vehicle with a predetermined force during the washing.

3,594,844
SWEEPING MACHINE TRACTOR ATTACHMENT FOR SPORTS GROUNDS
Derek Burtt Hargreaves, Adlington, near Macclesfield; Eric Staniforth, Macclesfield, and Edward Hobbs, Poynton, all of, England, assignors to "Sisis" Equipment (Macclesfield) Limited
Filed Dec. 3, 1968, Ser. No. 780,792
Int. Cl. E01h *1/04*
U.S. Cl. 15—83 **8 Claims**

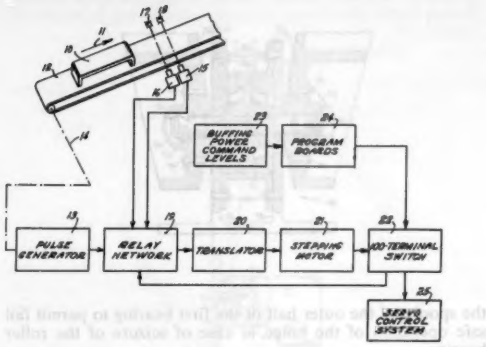


Sweeper attachment includes frame connectable to hydraulic lifting gear of a tractor. Collector having open front is pivotally mounted within frame; cable provided for tipping collector to empty it. Collector swings by gravity back to litter-receiving position, and held therein by releasable latch. Rotatable brush in front of collector sweeps litter into collector. Relatively large wheels support sweeper attachment in vicinity of brush, and smaller casters support back of attachment. Height of ground wheels adjustable with respect to frame.

3,594,845
PROGRAM CIRCUIT FOR AUTOMATIC BUFFING EQUIPMENT
Glenn J. Eggert, Columbus, Ohio, assignor to Houdaille Industries, Inc., Buffalo, N.Y.
Filed May 20, 1968, Ser. No. 730,445
Int. Cl. B24b *29/00*
U.S. Cl. 15—97 **8 Claims**

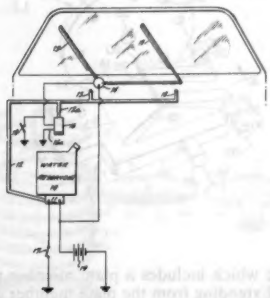
A program circuit for an automatic buffing system having a pulse generator for generating a sequence of signals which are keyed to the movement of a conveyor which carries the object to be buffed. A large number of signals are generated as the object being buffed passes beneath the buffing wheel. Each one of these signals being so generated is utilized to control a stepping motor which in turn moves a rotary switch having 100 terminals through one complete revolution for each pass of an object beneath the buffing wheel. A plurality of power selection signals are applied to each of the 100 terminals on the rotary switch, and the rotation of the switch applies each of the various power levels to a control circuit

for developing a desired power at the buffing wheel in sequence in accordance with a preselected program. In this



way, an irregularly contoured object may be buffed fully automatically.

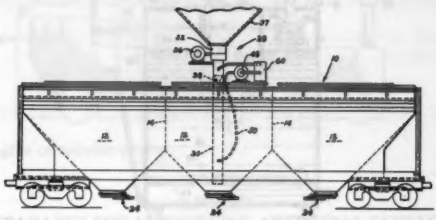
3,594,846
WINDSHIELD WASHER
Seiji Kimura, Aoi Mansion Apt. 4-C. 9-20, 3 Chome, Jingumae Lhibuya-Kie, Tokyo, Japan
Filed May 7, 1968, Ser. No. 727,245
Int. Cl. B60s *1/48*
U.S. Cl. 15—250.02 **6 Claims**



A windshield washer system for an automobile is disclosed having a switch responsive to the amount of water sprayed on the windshield by the system to operate the windshield wiper for a predetermined time. The switch includes a pair of contacts actuated by an inflatable bulb. The inflatable bulb expands dependent upon the amount of water flowing through the system and sprayed upon the windshield. A second embodiment is disclosed having a second switch responsive to the flow of detergent through the system to be sprayed upon the windshield to cause predetermined amounts of water to be sprayed upon the windshield and predetermined operation of the windshield wiper.

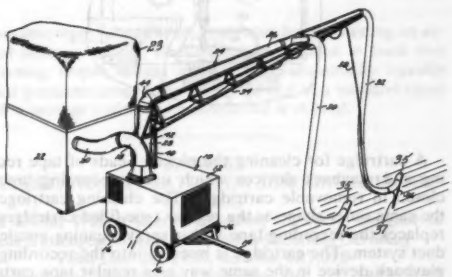
3,594,847
APPARATUS FOR LOADING PERISHABLE BULK COMMODITIES WITHIN A HOPPER
Dallas W. Rollins, St. Charles, Mo., assignor to ACF Industries, Incorporated, New York, N.Y.
Filed Oct. 3, 1969, Ser. No. 863,487
Int. Cl. B65g *67/06*
U.S. Cl. 15—306 B **7 Claims**

Apparatus for loading perishable commodities, such as potatoes, in a hopper and having an elongate chute adapted to fit within a hopper, and a valve within the chute mounted for vertical up and down movement. The valve is normally positioned adjacent the upper end of the chute in a closed position and is pushed down by the potatoes when the potatoes are discharged thereby to minimize the fall of the perishable commodities into the bottom of the hopper. The valve is opened automatically by the potatoes when the downward travel of the valve with the potatoes is restrained



at the lower end of the chute. A negative pressure is exerted adjacent the upper end of the chute and holds the valve in its upper position for the initial discharge of the potatoes in the hopper. An upward airflow is provided in the chute during the loading of the potatoes in the hopper and is effective to remove foreign matter, such as dirt or dust, entrained with the potatoes, during the entire loading operation.

3,594,848
MATERIALS HANDLING APPARATUS
Earl E. Atkinson, 3264 Colorado Lane, Costa Mesa, Calif.
Continuation-in-part of application Ser. No. 699,172, Jan. 19, 1968, now abandoned. This application Jan. 15, 1969, Ser. No. 803,124
Int. Cl. A47l *5/00*
U.S. Cl. 15—314 **7 Claims**

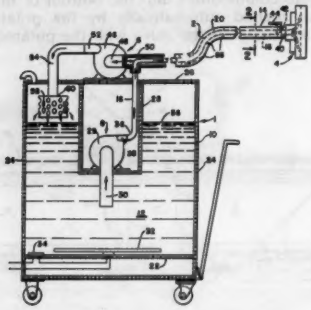


An apparatus for collecting and transporting solid materials such as trash, and including a blower for developing a vacuum in an intake conduit to transport the materials through the conduit in a stream of air to a collection bin or the like, the blower being of the centrifugal impeller type characterized by an outlet opening in the peripheral wall of the impeller housing, an inlet opening in a sidewall of the housing, and an inlet duct arranged so that its longitudinal centerline axis merges into the plane of rotation of the impeller adjacent the outer rim of the impeller, the inlet and outlet openings being located proximate each other so that solid matter entering the impeller chamber passes to the outlet with minimum contact with the impeller.

3,594,849
CLEANING APPARATUS
Chester L. Coshow, 1113 Center St., Collinsville, Okla.
Filed Oct. 13, 1967, Ser. No. 675,163
Int. Cl. A47l *7/00*
U.S. Cl. 15—321 **2 Claims**

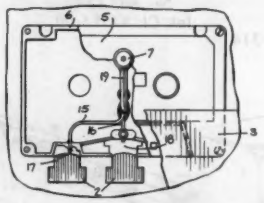
Apparatus for cleaning a surface including means for concurrently supplying liquid under pressure to a cleaning head

for sealing the supplied liquid within a surface area being



cleaned, and means for withdrawing the liquid and foreign matter from the surface area under subatmospheric pressure.

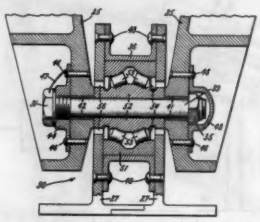
3,594,850
SPRAY CLEANING CARTRIDGE
Charles K. Wellington, Westford, Mass., assignor to Viatron Computer Systems Corporation, Bedford, Mass.
Filed Nov. 28, 1969, Ser. No. 880,803
Int. Cl. B08b *3/02, 5/02*
U.S. Cl. 15—405 **8 Claims**



A cartridge for cleaning the pickup heads of tape recording and playback devices which use a recording tape enclosed in removable cartridges. The cleaning cartridge has the same outer shape as the regular tape-filled cartridges and replaces the recording tape with a spray cleaning nozzle and duct system. The cartridge is inserted into the recording and playback device in the same way as a regular tape cartridge and cleaning fluid is sprayed onto the recording elements of the machine by coupling a source of cleaning spray to a spray inlet positioned at an accessible portion of the cleaning cartridge.

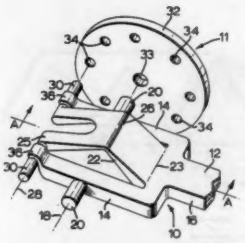
3,594,851
FAIL SAFE HINGE AND MOUNTING
Sidney C. Swatton, Thornton, Pa., assignor to The Boeing Company, Seattle, Wash.
Filed May 4, 1970, Ser. No. 34,215
Int. Cl. E05d *11/00*
U.S. Cl. 16—136 **13 Claims**

A hinge and mounting for connecting one structural member to another and particularly applicable in hinging a control surface to an aircraft structure. Two interlocked control surface brackets are interconnected by a bolt with two brackets extending from the aircraft structural member. A concave double roller bearing is housed within the brackets with the bolt passing through the center thereof. One-half of the bearing is confined between the structural member brackets and is not free to rotate. The other half of the bearing is restrained between the two control surface brackets and an enclosing spool which encircles the bearing and is held between the two control surface brackets. The outer half of the bearing is free to rotate by means of rollers with respect to the stationary inner half and bolt. An alternative version provides a second dry-bearing interposed between



the spool and the outer half of the first bearing to permit fail safe operation of the hinge in case of seizure of the roller bearing.

3,594,852
PIN HINGE
Alois Albin Krawagna, Willowdale, Ontario, Canada, assignor to Westhem Corporation Limited, Toronto, Ontario, Canada
Filed Nov. 3, 1967, Ser. No. 680,518
Int. Cl. E05d *7/00*
U.S. Cl. 16—150 **8 Claims**



A snap hinge which includes a plate member pivoted to a rigid member. Extending from the plate member at a location spaced from the first pivot is a resilient arm the end of which is integral through a flexible web with a connecting arm. The other end of the connecting arm is pivoted to the rigid member at a point spaced from the plate member pivot. Depending on the distance between the pivots, the snap hinge has either one or two at-rest positions.

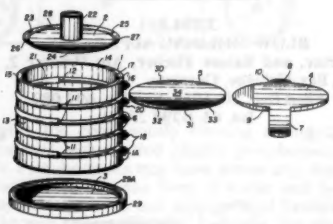
3,594,853
AUTOMOBILE DOOR HINGING
Robert Slattery, Rockford, Ill., assignor to Atwood Vacuum Machine Company, Rockford, Ill.
Filed July 28, 1969, Ser. No. 845,315
Int. Cl. E05d *3/10*
U.S. Cl. 16—163 **2 Claims**

The geared link hinge herein disclosed was designed with the latest streamlined designs of cars in mind and gives outward and forward throw to the hinged edge of the door for added space in entering and leaving the car, and, in particular, gives added headroom to avoid bumping one's head on the upper edge of the glass on the door with resultant cutting or bruising. One segmental gear on the body member is fixed, and another segmental gear on the door member has rolling meshing engagement on the first segmental gear. Pintles in the door and body members are disposed on the centers of the arcs of said segmental gears and have links pivotally connected with the opposite ends thereof to keep the teeth of the gears in meshing engagement. For conical hinging, the

pintles are disposed in acute angle relationship so the movable pintle on the door member describes a portion of a cone

the axis of which includes the pintle on the door member. The lower hinge is of the ball and socket type.

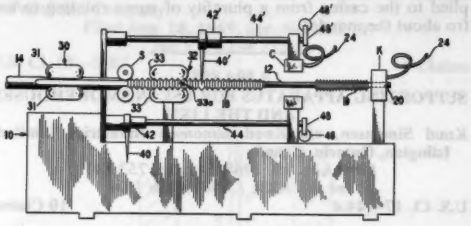
3,594,854
PATTY-FORMER
Paul Roedel, 391 Muncey St., Lindenhurst, N.Y.
Filed Jan. 13, 1969, Ser. No. 790,538
Int. Cl. A22c *7/00;* **A47j** *43/20*
U.S. Cl. 17—32 **10 Claims**



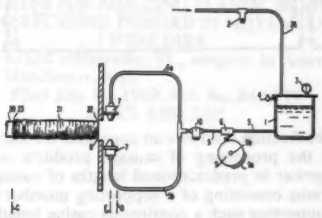
A patty former comprising a tubular body member adapted to have ground meat packed therein, the tubular body member including a wall having a plurality of parallel slots extending about a portion of the circumference thereof, a divider plate adapted to be selectively inserted through the slots in the wall of the tubular body member to divide the meat into patties, a separating member adapted to be releasably secured to the divider plate so that upon removal of the divider plate the separating member is released and maintains the patties in a separated state.

3,594,855
METHOD AND APPRATUS FOR OBTAINING PREDETERMINED LENGTHS OF SHIRRED CASING
Algimantas P. Urbutis, Chicago, Ill., assignor to Union Carbide Corporation
Filed Apr. 8, 1968, Ser. No. 719,567
Int. Cl. A22c *13/00*
U.S. Cl. 17—42 **10 Claims**

A method and apparatus are provided for obtaining shirred casing sticks which contain predetermined, measured, equal lengths of tubular casing.

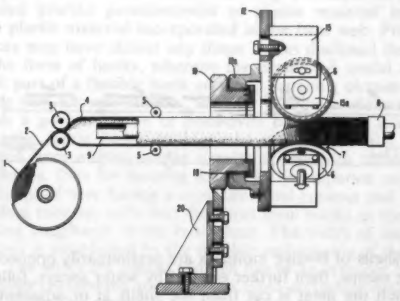


3,594,856
APPARATUS FOR MOISTENING ARTIFICIAL SAUSAGE CASINGS
Horst Michl, Wallau uber Wiesbaden, Germany, assignor to Kalle Aktiengesellschaft, Wiesbaden-Biebrich, Germany
Division of Ser. No. 710,935, Mar. 6, 1968, abandoned.
Filed Sept. 9, 1968, Ser. No. 758,359
Claims priority, application Germany, Mar. 9, 1967, K 61 673
Int. Cl. A22c *13/00*
U.S. Cl. 17—42 **5 Claims**



This invention relates to an apparatus for moistening an artificial sausage casing. The apparatus includes at least two moistening nozzle means mounted at substantially equally spaced positions around the discharge end of a mandrel upon which a sausage casing to be moistened is shirred.

3,594,857
PROCESS AND APPARATUS FOR SHIRRING SAUSAGE CASINGS
Horst Michl, Wallau uber Wiesbaden, Germany, assignor to Kalle Aktiengesellschaft, Wiesbaden-Biebrich, Germany
Filed Dec. 26, 1968, Ser. No. 787,070
Claims priority, application Germany, Dec. 27, 1967, P 16 32 113.4
Int. Cl. A22c *13/00*
U.S. Cl. 17—42 **9 Claims**



This invention relates to a process and apparatus for shirring a sausage casing, which process comprises slipping the

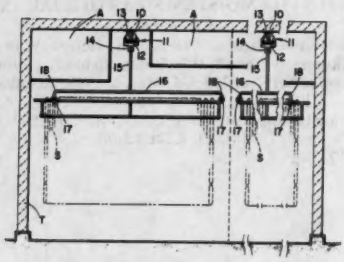
casing over a mandrel while maintaining an internal gas pressure in the casing, and compressing the casing against a stop with the formation of pleats, the compressive force being applied to the casing from a plurality of zones rotating to and fro about the mandrel.

3,594,858

SUPPORTING APPARATUS FOR USE IN SMOKEHOUSES AND THE LIKE

Knud Simonsen, c/o Knud Simonsen Industries Limited, Islington, Ontario, Canada

Filed Aug. 19, 1968, Ser. No. 753,547
Int. Cl. A22c *15/00*; A23b *1/04*
U.S. Cl. 17—44.4 **10 Claims**



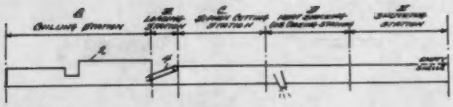
This specification discloses an apparatus for use in association with the processing of sausage products such as are linked together in predetermined lengths of casing material, the apparatus consisting of a supporting member for engaging and supporting such a continuous casing length of linked sausages, and having an upper supporting rail and two lower spaced apart spacer rails, the upper supporting rail carrying the main portion of the weight of the length of sausages over which the sausages are looped, and the lower spacer rail members holding the individual loops of sausages apart from one another, and further incorporates means for hanging such supporting apparatus from a typical monorail conveyor for continuous movement through a processing line.

3,594,859

METHOD AND APPARATUS FOR REMOVING MEAT FROM THE SHELLS OF BIVALVE MOLLUSKS

Fletcher Hanks, Jr., P.O. Box 70, Easton, Md., and William C. Grieb, Jr., Chestertown, Md., assignor to said Hanks by said Grieb

Filed Mar. 28, 1969, Ser. No. 811,389
Int. Cl. A22c *29/00*
U.S. Cl. 17—48 **13 Claims**



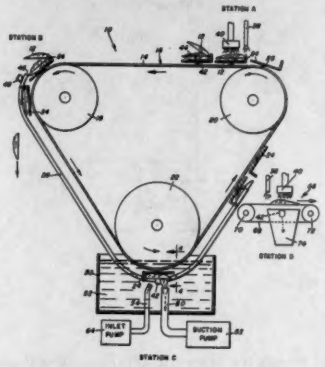
The shells of bivalve mollusks are preliminarily opened by heating means, then further opened by water sprays, following which the meat is cut from the shells at or adjacent its point of attachment thereto; then permitted to fall by gravity to a collection facility with the empty shells moving away in another direction.

3,594,860

METHOD FOR SHUCKING AND EVISCERATING BIVALVE MOLLUSKS

Richard W. Nelson, Bothell; Robert F. Mackin, Seattle, and Wayne I. Tretsven, Seattle, all of, Wash., assignors to The United States of America as represented by the Secretary of the Interior

Filed Nov. 12, 1969, Ser. No. 875,653
Int. Cl. A22c *29/00*
U.S. Cl. 17—48 **5 Claims**



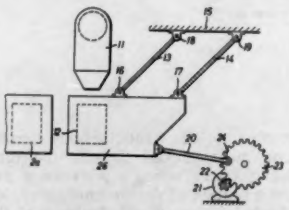
Bivalve mollusks are mechanically shucked and eviscerated in a continuous, automatic process. A burner severs one half-shell from the bivalve muscle, gaping the shell. The two half-shells are then physically separated and the remaining half-shell, with the muscle and viscera attached, is inverted in a water bath. Water jets strike the flesh, loosening the viscera from the muscle and shell. A suction pump ingests the viscera in a steadily flowing stream of water, thoroughly eviscerating the bivalve. Another burner then severs the muscle from the remaining half-shell.

3,594,861

BLOW-MOLDING APPARATUS

Stefan Fischer, and Rainer Fischer, Am Wildtor 2, both of Lohmar, Bez. Cologne, Germany

Filed Dec. 20, 1967, Ser. No. 692,083
Int. Cl. B29d *23/03*
U.S. Cl. 18—5 **6 Claims**



This invention relates to blow-molding apparatus wherein a mold is uniquely arranged with respect to an extruder head for movement into and out of the path of a parison from the extruder head for receiving the parison when in the path and discharging a molded object when out of the path.

3,594,862

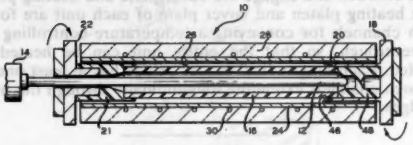
INTERNAL HEATING OF ROTATING PARISON

Charles L. Seefluth, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed Dec. 13, 1968, Ser. No. 783,604
Int. Cl. B29b *3/00*
U.S. Cl. 18—5 BH **3 Claims**

A rotating parison is heated with an internal radiant heating means, said parison being disposed within a sleeve during

the heating step to allow supplemental heat to be added from the outside of the parison. A shield, tapering toward the ends, can be provided around the heating means to provide



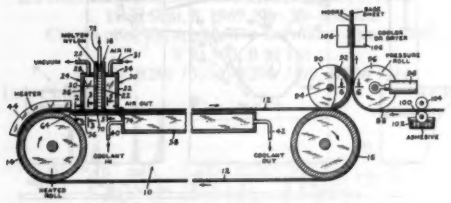
even heating, or if controlled variation in heating along the axis is desired, the heating means can comprise a member having variable turns of resistance wire along its axis or variable axially disposed loops.

3,594,863

APPARATUS FOR MOLDING PLASTIC SHAPES IN MOLDING RECESSES FORMED IN A MOVING ENDLESS BELT

George H. Erb, Cuttingsville, Vt., assignor to American Velcro, Inc., Manchester, N.H.

Filed July 10, 1969, Ser. No. 840,679
Int. Cl. B29c *3/02*
U.S. Cl. 18—5 **24 Claims**



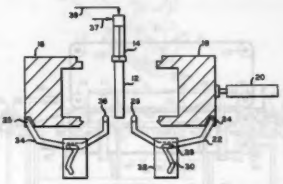
Apparatus for continuously forming extruded strips of plastic material with molded pilelike protuberances integral therewith. Protuberances may have almost any desired shape but as disclosed are in the form of hooks and loops which may be used as the hook and loop parts of flexible fasteners such as the well-known "Velcro" fasteners. For the latter use the strips and molded protuberances made on this apparatus are secured to a base web of flexible sheet material to produce a final product in which there are closely spaced rows of pilelike hooks and/or loops. The means for forming the strips and protuberances include continuous parallel grooves formed in an endless belt which is moved lengthwise through an extruder nozzle having entrance and exit lips pressed against the belt. The lips are shaped to correspond with the belt and to fit into the grooves and over the ridges between the groves in such manner that molten plastic material will be extruded in form of strips. Protuberances are formed in shallow elongated cavities formed in walls of grooves or ridges in belt. Exit lip will scrape all molten material from the belt other than in the cavities or on surfaces where extruded strips lie. A major advantage of the disclosed structure is that protuberances of very thin elongated form are molded without need for high injection pressures since the plastic material is laid in shallow elongated open troughs rather than being forced to enter deeply sunk elongated holes of small cross section. The lips of the extruder nozzle are formed of nonporous foam metal with contours fitting as desired into the grooves of the belt, the formation of such contours being effected by pressing and crushing the foam metal against the belt at a pressure considerably exceeding the pressure thereafter exerted between lips and belt under service conditions.

3,594,864

MOLD ACTUATED PARISON STRETCHING DEVICE

Dixie E. Gilbert, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed Aug. 18, 1969, Ser. No. 850,797
Int. Cl. B29d *23/03*
U.S. Cl. 18—5 BE **8 Claims**



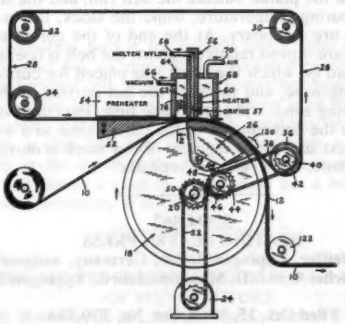
A parison preform held within a molding zone is gripped and stretched by means of a mechanism mechanically connected to the mold halves. As the mold halves close, jaw means are first converged to clamp the parison and then moved axially to stretch same.

3,594,865

APPARATUS FOR MOLDING PLASTIC SHAPES IN MOLDING RECESSES FORMED IN MOVING ENDLESS WIRE DIES

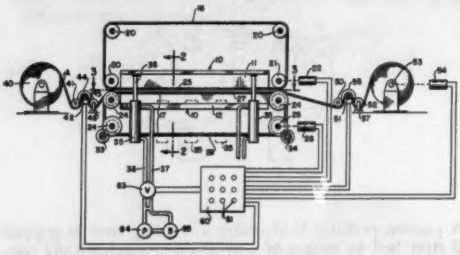
George H. Erb, Cuttingsville, Vt., assignor to American Velcro Inc., Manchester, N.H.

Filed July 10, 1969, Ser. No. 840,779
Int. Cl. B29c *3/02*
U.S. Cl. 18—5 **11 Claims**



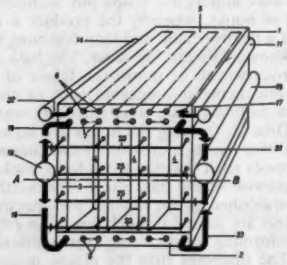
Apparatus for continuously forming a flexible web with molded pilelike protuberances of plastic material integral with plastic material incorporated in the base web. Protuberances may have almost any shape but as disclosed they are in the form of hooks, whereby the product is useful as the hook part of a flexible hook and loop fastening element such as the well known "Velcro" fastener. The base of the web is either a porous woven or nonwoven fabric or an extruded film, the fabric being impregnated with or the film being formed from molten plastic simultaneously with molding of the hooks. Dies for forming the hooks are separate continuous loops of wire having a cross-sectional contour and hook-molding recesses such that the wires form hooks in rows extending lengthwise of the base sheet. The width of the final product is established by the number and spacing of the wire dies. The wires are passed through lips of an extruder having openings conforming snugly to the cross-sectional contour of each wire. The openings strip the plastic material from the surfaces of the wires, leaving hook-shaped deposits of plastic in the molding recesses of the wires which are attached to the base sheet and, when cool are stripped from the wires.

3,594,866
AUTOMATED BELT PRESS
Clayton H. Skinner, Buffalo, N.Y., and Charles C. Kosa, Willowdale, Ontario, Canada, assignors to Hewitt-Robins Incorporated, Stamford, Conn., by said Skinner
Filed Jan. 8, 1969, Ser. No. 789,713
Int. Cl. B29h 3/00
U.S. Cl. 18—6 E 6 Claims



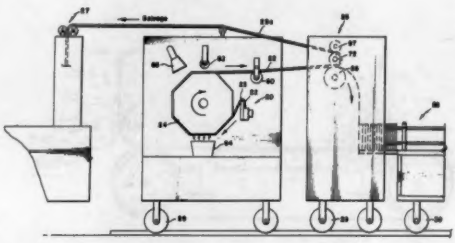
The disclosure relates to an apparatus and method for curing ribbonlike stock of curable material in successive longitudinal segments. In accordance with the invention, there is provided a bed press having two opposed platens, presenting confronting substantially flat pressing surfaces and defining a curing zone therebetween. An endless belt around one of these platens has a run passing through the curing zone between the platens, and the stock in the form of a continuous ribbon is delivered intermittently in successive segments through said zone and onto said belt run. Means are provided for moving the platens relatively towards and away from each other. In the operation of carrying out a cycle of the process of the present invention, a longitudinal segment of raw stock is pulled from a source of supply and delivered onto the belt run in the curing zone, the platens are moved relatively towards each other to clamp the stock segment between the belt run and the platen outside the belt run, and the stock is heated to curing temperature, while the stock, the belt and the platens are stationary. At the end of the curing period, the platens are moved relatively apart, the belt is operated to move the run on which the stock was placed for curing, our of the curing zone, and to move the net portion of the belt into the curing zone, and at the same time, the cured stock is moved with the belt run out of the curing zone to a windup, while the next successive segment of raw stock is moved into the curing zone. The cycles are repeated.

3,594,867
HEATING PLATEN PRESS
Heinrich Pfeiffer, Eppingen/Baden, Germany, assignor to J. Dieffenbacher G.m.b.H. Maschinenfabrik, Eppingen/Baden, Germany
Filed Oct. 25, 1968, Ser. No. 770,584
Claims priority, application Germany, Oct. 28, 1967, P 16 53 185.4
Int. Cl. B29h 5/00
U.S. Cl. 18—17 27 Claims



A heating platen press for manufacturing composition board, such as chipboard, shavings board, and the like. The press includes a stationary base unit and a movable press unit which respectively have working, heating platens directed toward each other and respectively provided with parallel working faces. These units are each composed of a box structure which includes, in addition to the heating platen, an opposed cover plate and longitudinal bracer bridges which extend between and engage the cover plate and heating platen. The heating platen and cover plate of each unit are formed with channels for conveying a temperature-controlling fluid therethrough, so that the entire unit can be heated and cooled. Each longitudinal bracer bridge has at least one row of such channels extending longitudinally through the bracer bridges.

3,594,868
FORMING UNIT FOR USE WITH APPARATUS FOR FORMING AND CUTTING THREE-DIMENSIONAL PLASTIC ARTICLES
Thomas W. Winstead, Williamson Lane, Cockeysville, Md.
Division of Ser. No. 480,917, Aug. 19, 1965, Pat. No. 3,479,694
Filed Oct. 13, 1969, Ser. No. 871,094
Int. Cl. B29c 17/04, 17/16
U.S. Cl. 18—19 5 Claims

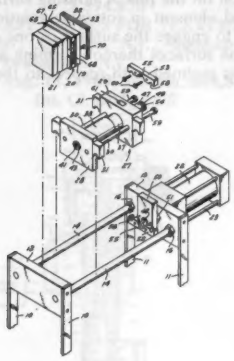


A forming unit for use in an integrated system which continuously extrudes a strip of foamed thermoplastic material, forms articles from the advancing strip, and cuts the formed articles therefrom. The unit consists of a rotatable forming wheel carrying a series of peripheral vacuum molds designed to form trays and other three-dimensional articles and sequentially connected to a source of vacuum. A vacuum chamber in each mold is connected with the cavity of the mold to form the articles and is also connected to a vacuum sheet sealing groove in the top surface of the upper edge of the mold, which, when vacuum is applied, secures the edges of the overlying strip of plastic material in place of the mold during the forming operation. Valve means are provided to control the application of vacuum to the molds and to the respective vacuum grooves.

3,594,869
INJECTION MOLDING MACHINE
Fred D. Sher, 40 Normandy Road, Clifton, N.J.
Filed Feb. 19, 1969, Ser. No. 800,567
Int. Cl. B29f 1/06
U.S. Cl. 18—30 LF 9 Claims

Stationary framework carries stationary mold part. Movable mold part carried by injection assembly slidable on framework toward and away from stationary mold part, mold parts defining a closed cavity when they meet. Injection assembly includes chamber containing molten plastic, and a

ram is movable with respect to framework into and out of chamber. Cross-sectional area of ram larger than cross-sectional area of mold cavity so that ram pressure simultaneously holds mold parts closed and injects plastic into cavity.

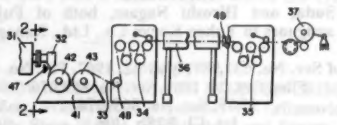


3,594,870

APPARATUS FOR THE PRODUCTION OF FILAMENTS FROM FOILS

Heinz Schippers, Remscheid-Lennep, and Rolf Hessenbruch, Remscheid, both of, Germany, assignors to Barmag Barmer Maschinenfabrik Aktiengesellschaft, Wuppertal, Germany

Division of Ser. No. 665,443, Sept. 5, 1967, abandoned, which is a continuation of Ser. No. 14,758, Feb. 25, 1970
Filed Sept. 8, 1969, Ser. No. 855,952
Claims priority, application Germany, Apr. 1, 1967 V 91 793, B 92 161
Int. Cl. B29c *15/00;* **B29b** *3/00;* **B29d** *7/14*
U.S. Cl. 18—4 S **8 Claims**



Apparatus adapted for production of endless, molecularly oriented, multifile filaments of thermoplastic polymers by extrusion of a foil or web through an elongated extrusion slit providing a foil extrusion with strand-forming segments of polygonal cross section and longitudinally extending breaking or tearing lines or zones therebetween. The extruded foil is cooled upon exit from the nozzle or immediately thereafter by surface-cooled rollers or drums or by immersion in a liquid cooler and/or by cooling air applied adjacent the nozzle. Prior to solidification, the extruded foil is longitudinally at least several times its original length. After cooling and solidification, it is again stretched between stretching roller assemblies to axially orient the polymer molecules and to tear the foil into filaments or strands along the breaking or tearing lines or zones.

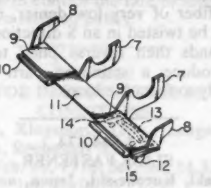
3,594,871

TOP CRADLE MECHANISM USABLE FOR A TEXTILE MACHINE

Shinzo Kitamura, 941, Oaza Ikagg, Hirakata-shi, Japan

Filed Apr. 23, 1969, Ser. No. 818,674
Claims priority, application Japan, Apr. 27, 1968, 43/28228
Int. Cl. D01h *5/86*
U.S. Cl. 19—250 **10 Claims**

A top cradle mechanism used for a common tensor bar-type fiber drafting system having more than one movable tensor on positioned of respective drafting equipment and a stationary plate common to respective drafting equipment. The movable tensors can perform a three-dimensional movement relative to the stationary plate according to respective drafting conditions in the corresponding drafting equipment. No interference between the neighboring drafting equipment results.

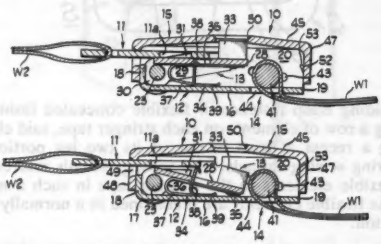


3,594,872

VEHICLE SAFETY BELT BUCKLE

Seymour J. Kulwin, Evanston, and James A. Swimmer, Des Plaines, both of, Ill., assignors to Jeffrey-Allan Industries, Inc.

Filed Mar. 25, 1969, Ser. No. 810,134
Int. Cl. A44b *11/26*
U.S. Cl. 24—77 **13 Claims**



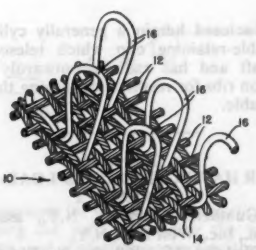
A pushbutton buckle for vehicle safety belts in which a base member has an upwardly biased latch member pivoted near its forward end, with the latch member being a second class lever that has an integral pushbutton at its rear end and intermediate rearwardly facing latch shoulders which engage holes in a slide link that is inserted through a transverse opening in the front of the base above the pivot. A fixed cover that makes a snap fit on the base has a hole through which the pushbutton is accessible.

3,594,873

FIRE-RESISTANT FASTENING DEVICE AND METHOD OF MANUFACTURE

Clive E. Hockmeyer, Jr., Lowell, Mass.; Marcel C. Ouellette, Bedford, N.H., and Peter P. Ferron, Manchester, N.H., assignors to American Velcro, Inc.

Filed Mar. 10, 1969, Ser. No. 805,419
Int. Cl. A44b *13/00*
U.S. Cl. 24—204 **5 Claims**



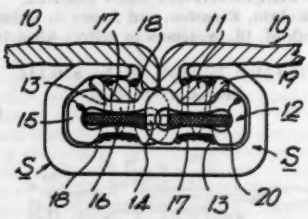
A separable fastening device, resistant to flame and having a very large number of closely spaced hooking elements of

the hook and loop type, such that pressing opposed surfaces of two fastening members together in face-to-face relation will engage a large number of hooks and loops, is disclosed; the loops are formed from a flame and elevated temperature resistant nylon fiber of very low denier, many filaments of which must first be twisted in an S direction and two each of the twisted strands then reverse plied together in the Z direction to produce a stabilized yarn having sufficient strength and body to form the loops.

3,594,874
SLIDE FASTENER

Yoshinori Fujisaki, Kurobe-shi, Japan, assignor to Yoshida Kogyo K.K., Tokyo, Japan

Filed Apr. 2, 1968, Ser. No. 718,161
Claims priority, application Japan, Apr. 15, 1967, 42/21,434
Int. Cl. A44b *19/1, 19/34*
U.S. Cl. 24—205.1 **4 Claims**

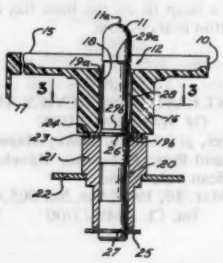


A sliding clasp fastener of flexible concealed fashion including a row of elements on each stringer tape, said element having a recess at least in one of its two leg portions for anchoring sewing threads. The sewing threads interconnect the flexible elements to the stringer tape in such a manner that the flexible elements are maintained in a normally flexed condition.

3,594,875
TURNTABLE-RETAINING CLIP

Albert E. Sanow, Grafton Township, Lorain County, Ohio, assignor to The General Industries Company, Elyria, Ohio

Filed Jan. 12, 1970, Ser. No. 2,037
Int. Cl. A44b *17/00;* **G11b** *3/60*
U.S. Cl. 24—214 **6 Claims**



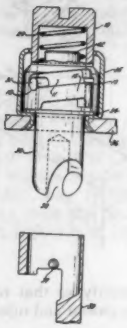
There is disclosed herein a generally cylindrical phonograph turntable-retaining clip which telescopes over the turntable shaft and has radially outwardly offset, axially parallel tension ribs for resiliently engaging the central opening of a turntable.

3,594,876
FASTENER HAVING IMPROVED LOAD-CARRYING CAPACITY

Conrad J. Gunther, Uniondale, N.Y., assignor to Dzus Fastener Co., Inc., West Islip, N.Y.

Filed Oct. 15, 1969, Ser. No. 866,698
Int. Cl. A44b *17/00*
U.S. Cl. 24—221 **11 Claims**

A fastener for substantially rigidly interengaging two members. A stud element is provided which is adapted to extend through an opening in one of the members to be fastened and has a cam slot adapted to engage a pin on the other of the members. The stud element is rotatable between an open and a closed position on the pin. A housing surrounds the upper part of the stud element in rotatable relationship therewith and is adapted to engage the surface of one of the members. The housing has surfaces thereon forming a slot in the wall thereof which is inclined with respect to the transverse axis

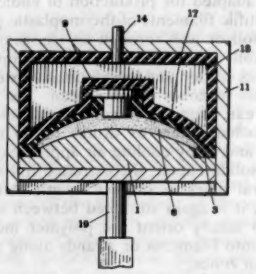


of the housing. A bar extends laterally from the stud element through the slot and engages the slot forming surfaces of the housing. Means are provided for retaining the bar in the slot so that when the pin is in the closed position and the housing or stud are rotated relative to one another, the bar will shift in the slot from the relaxed position to a locked position and will be supported by a portion of the slot forming surfaces while in the locked position to thereby increase the load-carrying capacity of the fastener.

3,594,877
APPARATUS FOR MANUFACTURING CERAMIC ARTICLES

Mitsuru Suda, and Hiroshi Nagase, both of Fujisawashi, Japan, assignors to Yuken Kogyo Co., Ltd., Kanagawa-ken, Japan

Division of Ser. No. 637,989, May 12, 1967, Pat. No. 3,520,961
Filed Oct. 24, 1969, Ser. No. 869,076
1969, Ser. No. 869,076
Int. Cl. B28b *7/06*
U.S. Cl. 25—27 **2 Claims**



An apparatus for manufacturing ceramic articles, such a tableware. A charge of substantially dry powder is introduced into a mold cavity defined between a substantially rigid mold member and a flexible mold member, and then one of these mold members is urged toward the other to compress the charge in the cavity between the mold members so as to give to the charge a predetermined configuration. Thereafter, the charge is removed from the mold and fired. In this mold, the flexible mold member is in the form of an elastic member capable of resiliently retracting itself from the charge when the molding pressure is released. A restraining means coacts with the flexible elastic mold member to prevent the latter from exerting on the charge any radial forces so that the elastic mold member will move toward and away from the

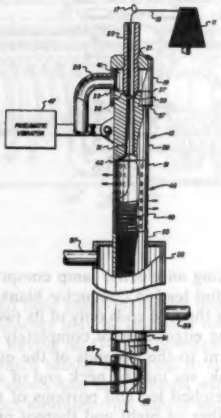
charge but will not have any tendency to rub along the surface of the charge.

3,594,878

PROCESS AND APPARATUS FOR TEXTURIZING YARN

William D. Porter, Asheville, N.C., assignor to Northrop Carolina, Inc., Swannanoa, N.C.

Filed Aug. 11, 1969, Ser. No. 848,875
Int. Cl. D02g *1/00*
U.S. Cl. 28—1.3 13 Claims



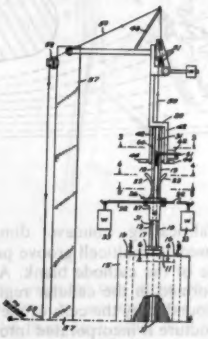
A method and device for crimping continuous filament yarn comprising providing a gas-actuated aspirator tube which serves to pull the yarn from its source and direct it to a crimping region which comprises a diffuser means downstream from the aspirator which separates the gas from the yarn, crimps the yarn and serves as a pressure means for forcing the yarn into a heater region where the crimping is set.

3,594,879

CONTROL MECHANISM FOR STUFFER CRIMPER

Steve E. Zeis, Wilmington; Alexander L. Trifunovic, White Cliff; Billy Steve Harris, Wilmington, and Steven Anthony Kaczmarczyr, Wilmington, all of, Del., assignors to Joseph Bancroft & Sons Company, Wilmington, Del.

Continuation of application Ser. No. 631,099, Apr. 14, 1967, now abandoned , which is a continuation of application Ser. No. 406,240, Oct. 26, 1964, now abandoned. This application June 9, 1969, Ser. No. 834,932
Int. Cl. D02g *1/12*
U.S. Cl. 28—1.7 8 Claims



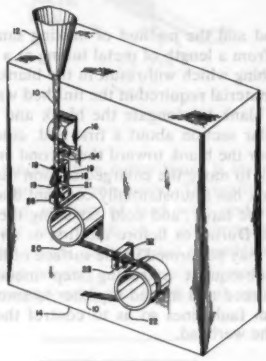
A stuffer crimper including a crimping chamber and a cooling chamber in the form of a plurality of spaced rods arranged to confine the crimped core. A choke member in the form of hinged fingers extend between the rods and exert pressure on the sides of the core for compacting the same and retarding the advance thereof. A feeler member engages the end of the core to control the rate of feed. The feed rolls are driven through a stepped pulley.

3,594,880

APPARATUS FOR DETECTING DEFECTIVE YARN CONDITIONS

Merton L. Dibble, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 26, 1970, Ser. No. 14,323
Int. Cl. D01h *13/22*
U.S. Cl. 28—64 7 Claims



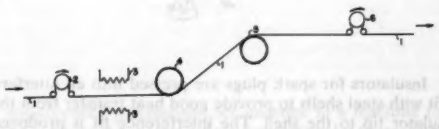
Apparatus arrangement for detecting defective conditions in a running yarn in a textile processing operation includes a yarn shear device and a waste jet aspirating device positioned along the running yarn path to cut the running yarn and aspirate the yarn into a waste container; each of the latter devices being activated either upon detection by a yarn sensor device of yarn breaks of roll wraps on an adjacent roll in the path, or upon detection of an excess of a predetermined number of slubs per unit of time by a slub detector connected to a monitoring device.

3,594,881

PROCESS FOR DELUSTERING SYNTHETIC RIBBON YARNS

Herbert Barber, and Howard Irving Freeman, both of Waynesboro, Va., assignors to Thiokol Chemical Corporation, Bristol, Pa.

Filed May 21, 1968, Ser. No. 730,846
Int. Cl. D04h *17/10*
U.S. Cl. 28—72 6 Claims



A continuous process for delustering synthetic ribbon yarn comprising heating the yarn, contacting the yarn with an abraiding medium, and thereafter contacting the yarn with a second abraiding medium while maintaining predetermined tensions in said yarn as it first contacts, passes between, and leaves said abraiding media.

3,594,882

WARHEAD AND METHOD OF MAKING SAME

Robert Lovell, Bloomfield Hills, Mich., assignor to Lawrence B. Boensch, Birmingham, Mich., a part interest

Filed Nov. 22, 1968, Ser. No. 778,249
Int. Cl. B21k 21/06
U.S. Cl. 29—1.2 26 Claims

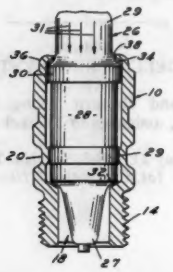
A warhead and the method of making same by cutting a tube blank from a length of metal tubing at a position on the length of tubing which will result in the blank containing the amount of material required in the finished warhead, cold extruding the blank to elongate the blank and to form an enlarged annular section about a first end, cold extruding the blank to taper the blank toward the second end, cold extruding the blank to move the enlarged section radially inward so that the blank has a substantially constant diameter form the first end to the taper, and cold extruding the blank to taper the first end. During or before the first or an early extrusion step groove may be formed in the surface of the blank so that during a subsequent extruding step metal adjacent the grooves if forced and moved together to smooth the surface and establish fault lines so as to control the fragmentation pattern of the warhead.

3,594,883

PROCESS FOR MANUFACTURING COLD SEALED SPARK PLUGS

Stewart V. Bray, Allen Park, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Continuation-in-part of application Ser. No. 583,580, Oct. 3, 1966, now Patent No. 3,451,110. This application Feb. 19, 1969, Ser. No. 800,595
Int. Cl. F23q 3/70; H01t 13/00
U.S. Cl. 29—25.12 3 Claims



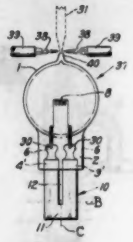
Insulators for spark plugs are pressed into an interference fit with steel shells to provide good heat transfer from the insulator tip to the shell. The interference fit is produced by deforming a portion of the shell inward to form an inwardly projecting ridge of the shell metal, and then pressing a portion of the insulator into an interference fit with the ridge. A polymeric sealer is applied to the insulator shoulder adjacent the upper edge of the shell, and the shell edge is rolled over the sealer to extrude a bead of sealer outward between the shell edge and the insulator. In an alternate construction, the insulator is tapered so only its upper portion has an interference fit the with shell.

3,594,884

METHOD OF MANUFACTURING AN ELECTRICAL DEVICE

Harvey V. Siegel, Mayfield Heights, Ohio, assignor to General Electric Company

Filed Aug. 1, 1969, Ser. No. 846,766
Int. Cl. H01j 9/18, 9/36
U.S. Cl. 29—25.15 7 Claims



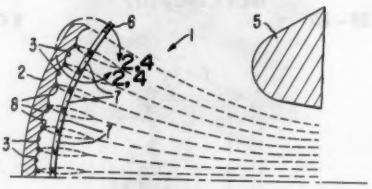
A method of making an electric lamp comprises the steps of forming a metal foil lead-in conductor blank of U-shaped configuration having the free ends only of its two leg portions etched to feather the edges thereof completely therearound, connecting a filament to the tip ends of the etched leg end portions of the blank, sealing the neck end of a vitreous envelope around the etched leg end portions of the foil blank while leaving the other or bight end thereof projecting outwardly of the envelope from the pinch seal, and then severing the foil blank at its bight end into two separate foil lead-in conductors spaced apart from one another. An electric lamp made by this method may have the projecting outer end portions of the two foil lead-in conductors folded back around the same one or around opposite ones of the flat sides of the pinch seal.

3,594,885

METHOD FOR FABRICATING A DIMPLED CONCAVE DISPENSER CATHODE INCORPORATING A GRID

George V. Miram, Daly City, and Gerhard B. Kuehne, Santa Clara, both of, Calif., assignors to Varian Associates, Palo Alto, Calif.

Filed June 16, 1969, Ser. No. 833,458
Int. Cl. H01j 9/16, 9/44
U.S. Cl. 29—25.18 9 Claims



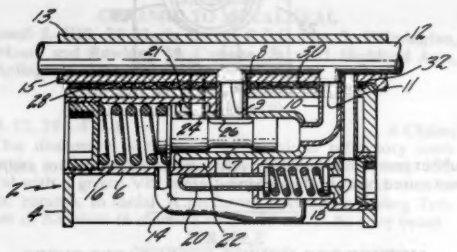
Methods for fabricating concave dimpled dispenser cathodes are disclosed. A multicell groove pattern is formed in the concave face of the cathode blank. An array of concave dimples are formed in the cellular regions of the concave emitter face bounded by the cells of the groove pattern. A multicell grid structure is incorporated into the groove pattern. The groove pattern is formable by photoetching, electrical discharge machining or by milling. The grid structure may be brazed into the grooves or merely supported therein in noncontacting relation therewith.

3,594,886

METHOD OF FABRICATING VALUE MODULE

Philip E. Barnes, North Granby, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

Filed Apr. 18, 1969, Ser. No. 817,457
Int. Cl. F16k 27/10
U.S. Cl. 29—157.1 3 Claims



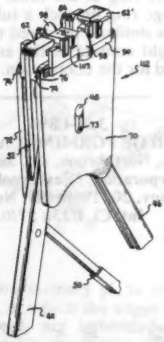
Miniaturized fluid components are provided by modules in which valve sleeves may be disposed in any orientation, the valve sleeves having no O-seals between them and the housing, and in which tubing is utilized to support and interconnect various valves and components within the module and to interconnect modules with supply and drain headers; and by a plurality of modules disposed on a construction made up of two plates between which are disposed the supply and drain tubes to which the modules are connected.

3,594,887

APPARATUS FOR ELECTRICALLY CONNECTING PAIRS OF CONDUCTORS

William Roderick Over, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Division of Ser. No. 596,672, Nov. 23, 1966, Pat. No. 3,438,407
Filed Mar. 19, 1969, Ser. No. 808,408
Int. Cl. H01r 43/04
U.S. Cl. 29—203 D 7 Claims



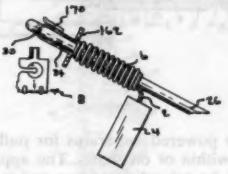
Corresponding wires of two pairs of wires (e.g. twisted pairs) are connected by an apparatus which separates the wires of the pairs from each other at a location adjacent to the wire ends. The wires of the two pairs are positioned against each other in the apparatus and individual electrical connections are effected between corresponding wires of the groups. End portions of the wires which extend beyond the electrical connections are cut off and removed.

3,594,888

APPARATUS FOR ASSEMBLING A MOTOR BRUSH

Kenneth Foster Folk, and Milton Dean Ross, both of Harrisburg, Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Continuation-in-part of application Ser. No. 696,512, Jan. 9, 1968, now abandoned. This application June 24, 1969, Ser. No. 843,275
Int. Cl. H01r 39/26
U.S. Cl. 29—203 R 8 Claims



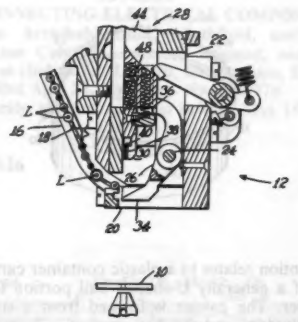
Lead wire extending from motor brush is inserted through coil spring and spring is compressed. Thereafter, terminal is crimped onto end portion of lead wire and holds spring between terminal and brush in a compressed condition. Motor brush with spring and terminal assembled to the lead wire is mounted in housing. The housing is mounted in electric motor in a manner such that brush bears against commutator.

3,594,889

TERMINAL-INSERTING MACHINES HAVING IMPROVED INSIDE FORMER

William S. Clark, So. Hamilton, Mass., assignor to USM Corporation, Flemington, N.J.

Filed Oct. 15, 1969, Ser. No. 866,563
Int. Cl. H01r 43/04; B25c 5/02
U.S. Cl. 29—203B 5 Claims

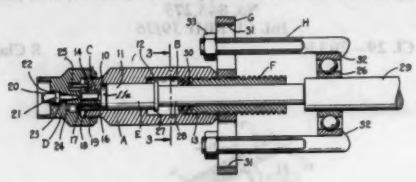


A wire-forming mechanism, for instance in a machine for forming and applying oppositely extending leads of components, comprises an inside former adapted in response to forming operation of an outside former, suitably to yield whereby leads of different diameters may be accommodated and precisely formed and advanced under control for terminal insertion. The invention has particular advantage in enabling a single inserting machine to attain reliable mounting in a printed circuit board of a pretaped series of components having differently sized bodies as well as differently sized leads.

3,594,890
EXPLOSIVE ACTUATED PULLING APPARATUS

Harold E. Cordell, 526 Union St., Spartanburg, S.C., and Marion C. Boyd, 132 Bon Air Ave., Spartanburg, S.C.

Filed Apr. 29, 1968, Ser. No. 724,843
Int. Cl. B23p 19/04
U.S. Cl. 29—255 4 Claims

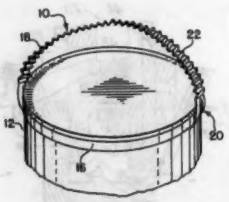


An explosive powered apparatus for pulling bearings and the like, from within or on shafts. The apparatus includes a barrel having a breech adjacent one end in which an explosive is carried. A piston is carried within the barrel for relative movement therewith. A sleeve having threads thereon is threaded within one end of the barrel for restricting the movement of the piston when the explosive is detonated and for regulating the force applied. A retaining member is carried adjacent the free-end of the sleeve, and has arms extending out therefrom for engaging the bearing. When the explosive is detonated the free-end of the piston pushes against the end of the shaft upon which the bearing is carried causing the arms to pull the bearing longitudinally along the shaft, thus freeing it. When the bearing is carried within the shaft a plate is positioned between the end of the piston and the shaft for transferring the force from the piston to the shaft during the pulling operation.

3,594,891
CONTAINER CARRIER

Ernest R. Cunningham, Libertyville, and Ronald C. Owen, Harwood Heights, both of, Ill., assignors to Illinois Tool Works Inc., Chicago, Ill.

Filed Jan. 27, 1970, Ser. No. 6,099
Int. Cl. A47j 45/07
U.S. Cl. 29—450 10 Claims



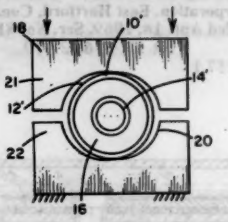
This invention relates to a plastic container carrier and the provision of a generally U-shaped bail portion for the container carrier. The carrier is formed from a strip of thermoplastic material and the bail portion is formed coplanar with the remaining portion of the carrier. The bail portion is cold worked to increase its length, decrease its thickness and provide a flexible handle for the container carrier.

3,594,892
METHOD OF PRODUCING A MULTIPLE COMPRESSION RATE BUSHING

Ross E. Stewart, Norwalk, Ohio, assignor to Clevite Corporation

Filed Apr. 14, 1969, Ser. No. 815,931
Int. Cl. B23p 11/02
U.S. Cl. 29—451 8 Claims

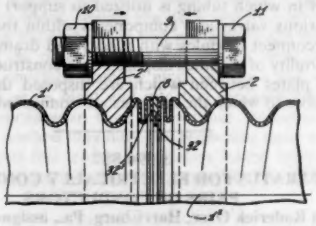
A bushing of an inner and an outer tubular sleeve and a rubber insert placed therebetween under radial compression, and in which the outer or the inner tubular sleeve is deformed out of round after assembly of the bushing. The rubber insert may be adhesively secured to the sleeves and/or post-cured prior to the deformation.



3,594,893
METHOD FOR JOINING CORRUGATED TUBES

Hubert Kuypers, Bad Nenndorf, Germany, assignor to Kabel- und Metallwerke, Gutehoffnung-shutte, Hannover, Germany

Filed Nov. 21, 1968, Ser. No. 777,679
Int. Cl. B23k 31/02
U.S. Cl. 29—470.5 10 Claims

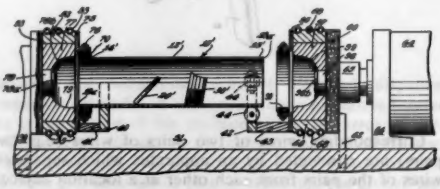


A method for joining corrugated tubes is disclosed according to which an end portion of a tube to be joined is upset, using, for example, a flange ring and a tool plate and tightening them together temporarily to effect upsetting, and to produce a wide end ring at the tube. After removal of the tool plate, the flange ring on such a tube end is tightened to the flange ring on a similarly prepared tube end or otherwise, to effect broad, tight contact of the end ring with whatever surface is presented for the connection.

3,594,894
METHOD OF FORMING CARTRIDGES

Carl H. Mayer, Jr., Northbrook, Ill., assignor to General Fire Extinguisher Corporation, Northbrook, Ill.

Filed Nov. 20, 1968, Ser. No. 777,266
Int. Cl. B23k 31/02
U.S. Cl. 29—471.1 13 Claims



A cylindrical container has each end partially integral formed with a final separate closure piece restrained against

outward pressure by the integrally formed portion and is formed by a method comprising the steps of inserting an end disc and a neck portion in a length of seamless steel tubing; heating the two ends of the tubing to an accurately controlled temperature which is slightly above the recrystallization temperature of the steel tubing and forming the spherical ends of the tubing in two heated dies which are held at a temperature below the recrystallization point.

3,594,895

CERAMIC TO METAL SEAL

Russell J. Hill, 20 Marie Drive, R.F.C. No. 3, Wilmington, Mass., and Rowland M. Cannon, Jr., 151 Highland Ave., Arlington, Mass.

Filed July 29, 1968, Ser. No. 748,227
Int. Cl. B23k *31/02*
U.S. Cl. 29—473.1 **8 Claims**

This disclosure is directed to metal to refractory seals wherein a ductile 50 atomic percent alloy of a group IV*b* metal with a group VIII metal of the same period is used to braze ceramic to metal. A preferred example is sealing Tantalum or Niobium to alumina with a 50 *a/o* Ti-Ni alloy braze.

3,594,896

METHOD FOR THE PROTECTION OF METAL ARTICLES AT ELEVATED TEMPERATURES

Michel Charveriat, Albertville, France, assignor to Ugine Kuhlmann, Paris, France

Filed Nov. 18, 1968, Ser. No. 776,812
Int. Cl. B23k *31/02*
U.S. Cl. 29—492 **7 Claims**

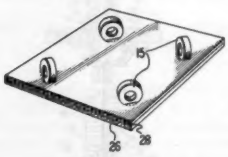
A method of protecting an article made of zirconium, titanium, hafnium, niobium, tantalum, vanadium or their alloys against high-temperature corrosion consisting of pickling the surface to be protected, galvanizing an alloy having an aluminum-silicon base and containing the metal which is to be protected and an equivalent surface and brazing the two surfaces together with the aid of a brazing metal selected from the group of copper, silver, beryllium, silicon and their alloys with one another.

3,594,897

METHOD OF CONSTRUCTING A MAGNETIC CORE MEMORY PLANE

Thomas Philip Fulton, Brookline, Mass., assignor to RCA Corporation

Filed May 16, 1969, Ser. No. 825,298
Int. Cl. H01f *7/06*
U.S. Cl. 29—604 **9 Claims**



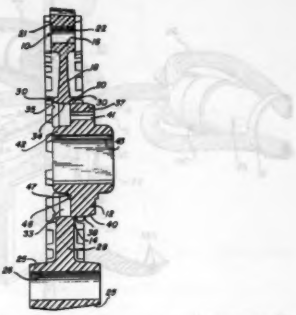
A ferrite magnetic core memory plane construction, and method of construction, in which the edges of the magnetic cores, after being primed, are imbedded in a tenacious material coated on a flexible supporting sheet, the material being a silicone rubber having a jelly-like resilience. The edges of the cores are imbedded an amount equal to about one-half the dimension radially between the inner and outer surfaces of the cores so that the holes in the cores are fully exposed for wires to be threaded therethrough. The cores tend to spring back to their set positions after being displaced in any direction during the assembly of a memory plane. The completed memory plane includes the flexible sheet and rubber-adhered cores as an integral part of the construction to protect the cores from mechanical shock, thermal changes, etc.

3,594,898

METHOD OF MAKING A ROTARY SWITCH

Raymond F. Lewandowski, Mt. Prospect, Ill., assignor to Oak Electro/Netics Corporation

Division of Ser. No. 634,399, Mar. 23, 1967, Pat. No. 3,389,235, continuation-in-part of Ser. No. 474,244, July 23, 1965
Filed Apr. 12, 1968, Ser. No. 851,767
Int. Cl. H01b *11/00*
U.S. Cl. 29—622 **3 Claims**



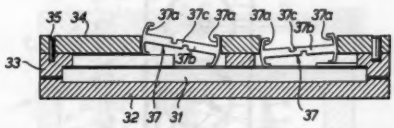
A rotary selector switch of molded plastic having a rotor blade overlapping the edge of the stator, with an axially directed rim on the stator around the rotor opening. The face of the stator is divided into sections for the stator clips, by radial ribs. The switch is assembled from a molded blank having a stator portion with a rotor portion attached thereto by an integral web. The rotor portion is parallel to and axially spaced from the stator, in line with the rotor opening. A rotor blade is placed on one side of the rotor with an attachment leg extending into the rotor. An axial force is applied to the rotor, rupturing the web, moving the rotor into the opening of the stator and securing the rotor blade to the rotor.

3,594,899

INTERCONNECTING ELECTRICAL COMPONENTS

John William Archibald Hunt, Northfield, and Michael Searle, Sutton Coldfield, both of, England, assignors to Joseph Lucas (Industries) Limited, Birmingham, England

Filed Apr. 22, 1968, Ser. No. 722,976
Claims priority, application Great Britain, May 15, 1967, 22400/67
Int. Cl. H05k *3/00*
U.S. Cl. 29—626 **1 Claim**

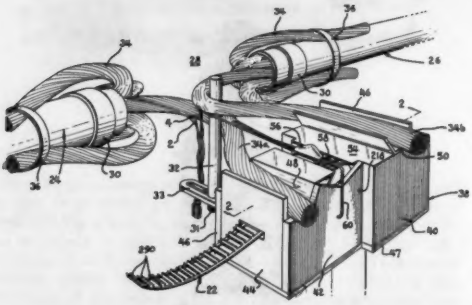


In the manufacture of a voltage regulator, or in the interconnection of components on a printed circuit generally, a masking device is used on the printed circuit having slits therein. Conductors are engaged within the slits so as to extend between and contact the components to be interconnected, and the whole assembly is then heated, solder being provided to make the required connections.

3,594,900
METHOD AND APPARATUS FOR CONNECTING PAIRS OF CONDUCTORS

Frank Peter Dola, Port Richey, and John Roy Vickery, Jr., Clearwater, both of, Fla., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Dec. 10, 1968, Ser. No. 782,596
Int. Cl. H01r *43/00, 43/04;* B23d *25/00*
U.S. Cl. 29—628 19 Claims

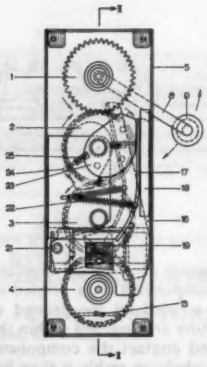


Corresponding wires of two pairs of wires are electrically connected to each other in separate electric connections by means of crimping apparatus comprising two spaced apart anvils which are adapted to support open U-type connectors. A pyramidal separator, for separating the wires of a pair, is located between and above the anvils so that the two wires of one pair can be lowered over the separator and the individual wires of the pair will each be guided into one of the connectors. After the wires of the two pairs have been located in the connectors, the connectors are moved along an arcuate path to an inserting station where the wires are stuffed into insulation-piercing slots in the connectors. Thereafter, the connectors are moved to a crimping station at which the connectors are crimped onto the wires. In accordance with the method aspect of the invention, the wire pairs are transferred from bundle trays disposed on each side of the crimping dies to a position above the separator to locate the wires of the pairs in the individual connectors in a manner such that numerous pairs of conductors in the ends of two multipair cables can be connected to each other in a relatively short time.

3,594,901
WALL CAN OPENER

Theodorus Cornelis Marie Van Der Kroft, Valkenswaard, Netherlands, assignor to Brabantia AG, Zug, Switzerland

Filed Jan. 30, 1969, Ser. No. 795,253
Claims priority, application Netherlands, Feb. 13, 1968, 6801995
Int. Cl. B07b *7/32;* B67b *7/38*
U.S. Cl. 30—9 3 Claims

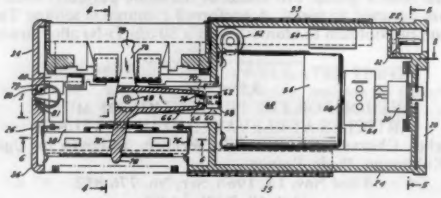


A wall can opener comprises a knurled wheel and a circular knife adapted to clamp a can between them and to be driven by a crank whereby the knife cuts through the top of the can. The crank is arranged on the same side of the opener as the knife, and the crank shaft is perpendicular to the wall and spaced with respect to the knife, so that the crank may freely turn past the clamped can. The crank shaft is coupled with the knurled wheel by means of a transmission.

3,594,902
SHAVER

Carl Louis Otto, New York, N.Y., and Henry J. Walter, Lancaster, Pa., assignors to Schick Electric Inc., Lancaster, Pa.

Filed Mar. 13, 1969, Ser. No. 807,041
Int. Cl. B26b *19/10*
U.S. Cl. 30—34.1 1 Claim

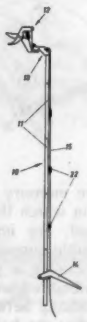


An electric shaver is provided with one or more shaving heads disposed parallel to the shaver motor longitudinal axis. The shaver motor drives an eccentric shaft head which oscillates the opposed tips of an actuator which engage and drive moveable cutters of the shaving heads. The shaver is provided with slidable covers for covering the head or heads when not in use.

3,594,903
PRUNING APPARATUS

Jean Schluchter, 79, Route de Saint-Julien, Geneva, Switzerland

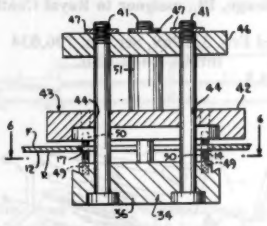
Filed Mar. 6, 1969, Ser. No. 804,786
Claims priority, application Switzerland, Mar. 6, 1968, 3421/68
Int. Cl. B26b *13/26*
U.S. Cl. 30—249 3 Claims



This invention relates to a pruning apparatus comprising a pole; pruning scissors mounted on one end of said pole, said pruning scissors being rotatable around an axis of rotation substantially perpendicular to said pole; and means including

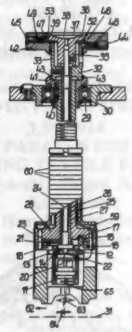
a control handle located at the other end of said pole for actuating said pruning scissors in such a way that the actuation of the pruning scissors is independent of their angular position about said axis of rotation.

3,594,904
DRAW PUNCH CUTTER
William Finley Wright, Vestal, N.Y.
Division of Ser. No. 709,597, Feb. 27, 1968, Pat. No. 3,500,531
Filed Feb. 6, 1970, Ser. No. 9,221
Int. Cl. B26f *1/02*
U.S. Cl. 30—360 8 Claims



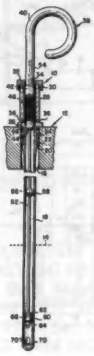
A draw punch cutter having first and second die members placeable, from one side only, on opposite sides of a panel operative to widen an opening.

3,594,905
COPYING DEVICE FOR CUTTING MACHINES
Otto Kretschmer, Steinhein am Main, Germany, assignor to Messer Griesheim GmbH, Frankfurt am Main, Germany
Filed Jan. 23, 1968, Ser. No. 699,964
Claims priority, application Germany, Jan. 26, 1967, M72545
Int. Cl. B23q *35/48, 35/128*
U.S. Cl. 33—23 14 Claims



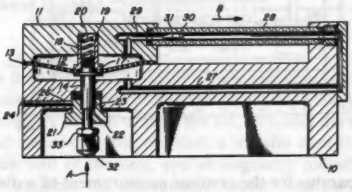
A copying device for machine tools, such as flame and plasma machines, wherein the tool movement is controlled by a preset scanning device which tracks the lines or edges and which has a forward stroke normal to the tool movement is characterized by having the forward stroke of the scanning device adjustable in accordance with the cutting speed of the tool.

3,594,906
TRANSPARENT LIQUID LEVEL INDICATOR
William H. Kerfoot, P.O. Box A, Berryville, Va.
Filed Feb. 27, 1970, Ser. No. 15,244
Int. Cl. G01f *23/04*
U.S. Cl. 33—126.4 1 Claim



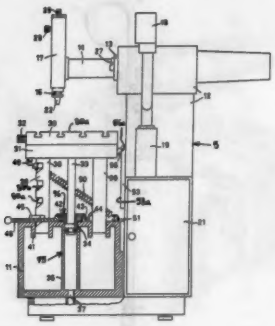
A transparent liquid level indicator in which a transparent casing is disposed within the tank or reservoir and is provided with a movable plunger. Biasing means normally maintain the plunger in its uppermost position, and when the handle is depressed, the plunger is provided with a piston on the lower end thereof which is depressed or moved downwardly in the casing below an oil or liquid inlet port. The liquid within the tank then enters the casing, and the handle is released so that the biasing means causes the handle to move back to its normal uppermost position and to trap the liquid within the transparent casing. The liquid that is then held or trapped within the transparent casing indicates the level of the liquid in the reservoir when the casing is removed from the reservoir.

3,594,907
LINEAR MOTION INDICATOR
Martin S. Schlegel, 1212 E. Gardenia St., Phoenix, Ariz.
Filed Mar. 21, 1969, Ser. No. 809,066
Int. Cl. G01b *3/22*
U.S. Cl. 33—172 C 2 Claims



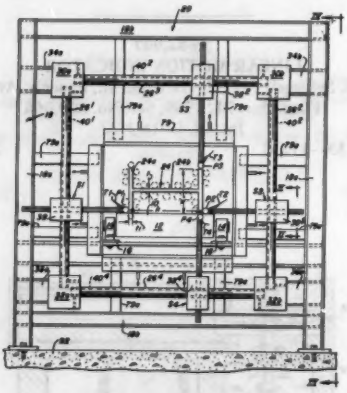
A linear motion indicator for use on power-driven machinery. The indicator has a slidable plunger that communicates with the movable portion of the machine. A hydraulic system, responsive to movement of the plunger, includes a resiliently compressible slave piston proximate a delineated scale.

3,594,908
PRECISION MEASURING MACHINE
Elio Pagella, Ivrea, Italy, assignor to Ing. C. Olivetti & C., S.p.A., Ivrea (Turin), Italy
Filed Sept. 6, 1968, Ser. No. 757,958
Claims priority, application Italy, Sept. 14, 1967, 53018A/67
Int. Cl. B23q *17/00, 17/18*
U.S. Cl. 33—174 L **8 Claims**



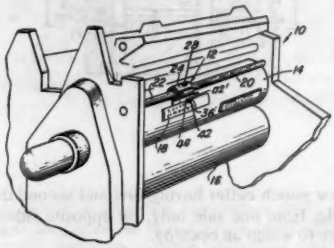
A machine for conducting precision measuring operations. The machine comprises an article-supporting work table and a sensor element moveable into contact with an article on the table. The sensor is moveable along three mutually perpendicular axes and the table is shiftable toward and away from the sensor to increase the flexibility and overall capacity of the machine.

3,594,909
APPARATUS FOR MEASURING A DIMENSION OF A MEMBER
Robert A. Schultz, Penn Hills Township, Allegheny County, Pa., assignor to United States Steel Corporation
Filed Feb. 26, 1969, Ser. No. 802,500
Int. Cl. G01b *7/28*
U.S. Cl. 33—174 PA **16 Claims**



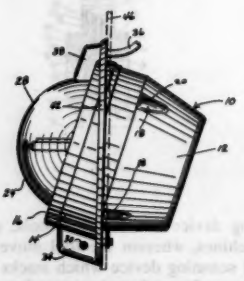
An apparatus for the contour measurement of a dimension of a member, defined by opposed contours has a frame and opposed sensing assemblies aligned adjacent the contours. Each of the sensing assemblies has a guide on the frame disposed adjacent to a contour; a mount reciprocable on the guide, a first drive connected to the mount for reciprocating the mount on the guide adjacent the contour; a probe reciprocable in the mount between an initial position away from the contour, a probe contact position which provides zero settings for the apparatus and a probe measuring position in engagement with the contour; a second drive connected to the probe for reciprocating the probe between the initial position, the probe contact position and the probe measuring position; and a first signal device associated with the probe and operable to produce a zero signal when the probe is in the probe contact position and to produce a measurement signal when the probe is in the probe measuring position. A control device is connected to the first drive, the second drive and the first signal device. The control device causes the first drive to move the probe along the contour; and causes the second drive to move the probe between the initial position, the probe contact position and the probe measuring position.

3,594,910
DIE-LOCATING METHOD
Alfred Ross, Chicago, Ill., assignor to Royal Continental Box Company
Filed Feb. 3, 1969, Ser. No. 796,034
Int. Cl. B41b *1/00*
U.S. Cl. 33—184.5 **4 Claims**



A printing locator and method for a printing system having a roll on which dies are to be placed individually, including a locating mechanism movable axially of the roll for selecting an axial position on the roll. The locating mechanism is movable into position where a guide member extension attached thereto engages the surface of the roll at a selected circumferential location on the roll. The guide member is provided with an indicator identifying the selected axial location so an individual die can be abutted up against the guide member in proper axial and circumferential position on the roll.

3,594,911
COMPASS
Allen B. Sherman, and Theodore A. Sherman, both of Pembroke, Mass., assignors to E. S. Ritchie & Sons, Inc., Pembroke, Mass.
Filed Dec. 17, 1969, Ser. No. 885,715
Int. Cl. G01c *17/18, 17/24, 17/38*
U.S. Cl. 33—225 R **7 Claims**



A compass adapted to be flush-mounted in a vertical bulkhead at an angle which increases the amount of overhead light falling on the compass card and which permits the com-

pensator system to be adjusted without removing the compass from the bulkhead. The compass housing has an integral mounting ring which forms an angle with the housing open end through which the card is viewed.

3,594,912
MEASURING APPARATUS FOR THE GEOMETRIC CHECKING AND-OR CORRECTION OF RAILROAD TRACKS

Gerard Sauterel, Pully, Switzerland, assignor to Matisa Materiel Industriael S.A., Crissier Pres Lausanne, Switzerland

Filed May 9, 1969, Ser. No. 823,314
Claims priority, application Switzerland, May 15, 1968, 7267/68
Int. Cl. G01b *5/20*
U.S. Cl. 33—174 R **9 Claims**

There is disclosed a measuring apparatus for the geometric checking or correction of railroad tracks, which is of the type incorporating two measuring means extending in the lengthwise direction of the track. A deformable mechanism serves to operatively interconnect the two measuring means, each of which bears upon at least one of both rails of the railroad track. The deformable mechanism incorporates at least two converging rod members. The one respective end portions of the two converging rod members are pivotably connected with one of the measuring means through the agency of a movable element and the opposite end portions of these two converging rod members are pivotably connected with the other measuring means.

3,594,913
METHOD FOR DEHYDRATING MATERIALS

George Tooby, 1355 Circle Drive, San Marino, Calif.

Filed Oct. 4, 1968, Ser. No. 764,989
Int. Cl. F26b *5/06*
U.S. Cl. 34—5 **5 Claims**

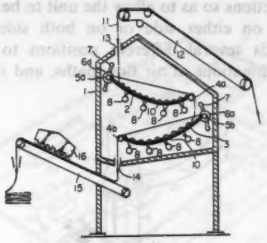
A method of dehydrating a heat-sensitive product including the steps of controllably freezing the product to be dried and then dehydrating the frozen product by subjecting it to an inert, dry gas arranged to have a preselected temperature, velocity and subatmospheric pressure to sublime the frozen liquid. The internal temperature of the product is maintained between 14°—27°F. during the dehydration period. The vaporized fluids are carried away from the surface of the product during the dehydration period.

3,594,914
PROCESS AND APPARATUS FOR CONTINUOUSLY RELAXING TEXTILE FABRICS

Shigeo Kutsuki, Nagoya-shi; Shigeo Nakamura, Nagoya-shi; Kenji Shimmachi, Nagoya-shi; Yoshikazu Sando, Wakayama-shi, and Hiroshi Ishidoshiro, Wakayama-shi, all of, Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan and Sando Iron Works, Co., Ltd., Wakayama-ken, Japan

Filed Aug. 22, 1969, Ser. No. 852,336
Claims priority, application Japan, Aug. 31, 1968, 43-62557/68
Int. Cl. F26b *7/00*
U.S. Cl. 34—12 **32 Claims**

Textile fabric which has residual inner stresses can be uniformly continuously relaxed by a method in which the fabric is heated by steam or hot water and subjected to a mechanical impact such as vibration or jumping, and at the same time, carried along a treating surface owing to the effects of the heating fluid and the mechanical impact. An apparatus for carrying out the method comprises a carrying plate for fabric to be relaxed, a heating medium jetting means corresponding to the carrying plate, and an impact-exerting mechanism. By the method and the apparatus, the textile fabric can be uniformly and continuously relaxed without



any fixed wrinkles, and results in suitable handling, bulkiness and dimensional stability.

3,594,915
HAIR-DRYING DEVICE

Kenneth C. Routledge, 4 Back Mount Pleasant, Middleton, Leeds, Yorkshire, England

Filed Aug. 15, 1969, Ser. No. 850,553
Int. Cl. A45d *20/20*
U.S. Cl. 34—96 **7 Claims**

A device for drying and/or setting hair which enables the wearer to move about freely during use thereof. The device comprises separate hood and cap members. The cap is constructed of a multilayer, open mesh, moisture-absorbing material which is initially placed over the wearer's hair. The hood is formed of alternating layers of asbestos or glass fiber cloth with additional layers of heat-retaining fibrous packing and flexible heat-reflecting foil placed therebetween. The hood, after being heated by external heating means to a temperature of about 200° C., is placed over the cap thereby providing the requisite thermal energy for drying the hair.

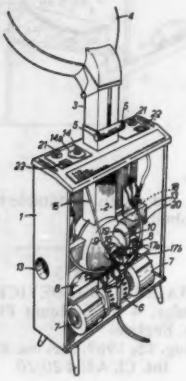
3,594,916
HAIR DRYERS

Arthur W. Mason, 45a Hampton Lane, Solihull, Warwickshire, England

Filed Aug. 8, 1969, Ser. No. 848,427
Int. Cl. A45d *20/08*
U.S. Cl. 34—98 **19 Claims**

A unit forming a hot air source for a hair dryer comprising at least one fan and at least one heater over or through which air is moved by the fan to heat the air, an outlet duct leading to a hood associated with the unit, a transfer duct leading to an outside wall of the unit, and an angularly movable valve member capable of movement under manual control between a first position in which it directs the heated air from the heater to the outlet duct and a second position in which it directs the heated air from the heater to the transfer duct. The valve member preferably has a third position in which there is an air flow path from the transfer duct to the outlet duct. By turning the valve member appropriately the hood can be supplied with hot air from the heater built into the unit or from an outside source (such as a second similar

unit), or the hot air from the heater of the unit can be fed to a second unit. In a preferred embodiment we provide two heaters and also two transfer ducts, these ducts extending in opposite directions so as to allow the unit to be connected to similar units on either side or on both sides. The valve member needs several different positions to give all the required combinations of air flow paths, and in practice we



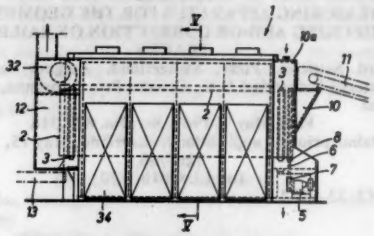
mount the valve member in a drum-shaped casing having ports opening into its curved surfaces. Further, where the or each heater is electric, we can link manual control means for the valve member to electric switching means to switch the or each heater automatically on or off to suit the selected valve position. An electric motor driving the or each fan may be similarly automatically controlled, and so may a valve in the or each transfer duct.

3,594,917
GARMENT BAG WITH STEAMER
Gary L. Montgomery, 234 West 650 South, Bountiful, Utah
Filed June 26, 1969, Ser. No. 836,891
Int. Cl. F26b 9/06
U.S. Cl. 34—151 **8 Claims**

A garment bag for storing or transporting garments that includes a frame adapted to receive a steam-generating unit.

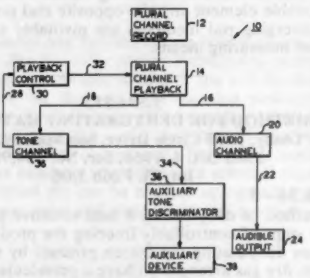
3,594,918
APPARATUS FOR TREATING FIBROUS MATERIAL
Wilhelm Quester, Cologne-Lindenthal; Carl Steinmetz, Cologne-Sulz, and Josef Clemens, Cologne, all of, Germany, assignors to Firm Wilh. Quester, Cologne-Sulz, Germany
Filed Dec. 18, 1968, Ser. No. 784,693
Claims priority, application Germany, Dec. 23, 1967, Mar. 15, 1968, P 16 32 157.6; P 16 57 230.8
Int. Cl. F26b 11/04
U.S. Cl. 34—131 **12 Claims**

This disclosure provides an apparatus for drying fibrous materials such as tobacco. The fibrous material being treated is moved in an axial direction through a drum wherein treating medium is passed through the material in a substantially transverse or radial direction with respect to the drum. The treatment medium may be air used in a drying operation or other types of treating fluids used in operations such as



remoisturizing or impregnating. Various auxiliary devices may be used to control the atmospheric conditions within the drum and the treatment medium which is passed transversely through the charge of fibrous material moving through the drum in an axial direction.

3,594,919
TUTORING DEVICES
Lawrence R. De Bell, Bethany, and David D. Price, Jr., Oklahoma City, both of, Okla., assignors to The Economy Company, Oklahoma City, Okla., by said De Bell
Filed Sept. 23, 1969, Ser. No. 860,292
Int. Cl. G09b 5/04
U.S. Cl. 35—8 A **3 Claims**

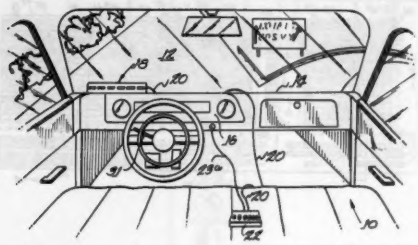


Apparatus for dissemination of programmed information for purposes of tutoring and the like. The apparatus comprising a plural channel record and playback device, each channel being connected to supply input to an audio and a control tone processing channel, respectively; the audio information being reproduced audibly for the benefit of one or more students or users, while the control tone processing channel provides selectively placed periodic control tones for purposes of controlling the playback and learning functions. The apparatus includes specific circuitry for automatically repeating a predetermined segment of recorded audio information, as well as tone discrimination means responsive to predetermined auxiliary control tones to cause periodic actuation of selected auxiliary equipment operating in coaction with the tutoring device.

3,594,920
DRIVING INSTRUCTION FOR PERSONS WITH A HEARING HANDICAP
Thomas J. Kordewick, 138 W. Naperville Road, Westmont, Ill.
Filed July 11, 1968, Ser. No. 744,026
Int. Cl. G09b 9/04
U.S. Cl. 35—11 **3 Claims**

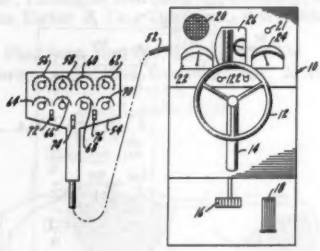
A method and apparatus for teaching driving to students having a hearing deficiency in a student-instructor relation-

ship wherein an instructional signal device having visually indicated instructions thereon is mounted in the normal front visual line-of-sight of the driver in an automotive vehicle and



a control means connected to the instructional signal for operation by the instructor, wherein preselected individual driving instructions are indicated to the student on the instructional signal device activated by the instructor.

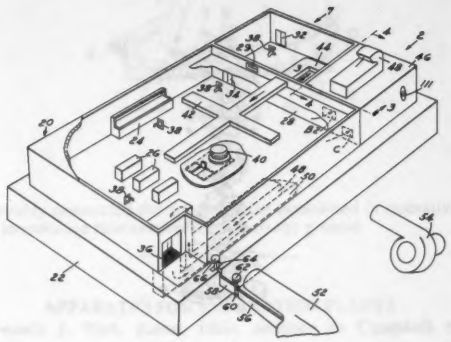
3,594,921
DRIVER TRAINING AND TESTING APPARATUS
Hubert H. Quicker, Jr., 2523 Hewitt St., La Crosse, Wis.
Filed June 19, 1969, Ser. No. 834,802
Int. Cl. G09b *9/04*
U.S. Cl. 35—11 **32 Claims**



A driver-training apparatus including means for simulating various driving conditions, such as fixed objects in the path of the driver, passing situations, varying weather conditions, varying types of automobiles, and other conditions customarily encountered in day-by-day driving. There is a console for the student driver which includes the conventional brake, accelerator and steering wheel, as well as various meters for use by the student to determine his effectiveness in driving. There is a control unit operated by the instructor whereby he may program certain driving conditions to which the student must react while sitting at the training console.

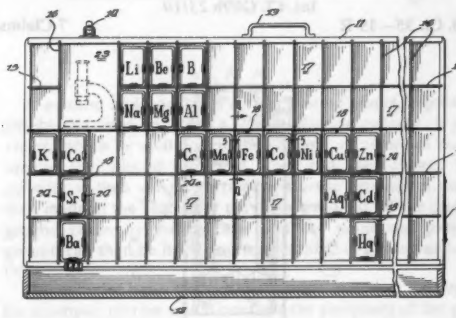
3,594,922
TECHNICAL DISPLAY MODEL
William L. Ellis, 2876 Pease Drive, Rocky River, Ohio
Filed Nov. 4, 1969, Ser. No. 873,965
Int. Cl. G09b *25/04*
U.S. Cl. 35—16 **26 Claims**

The invention pertains to an architectural technical display model for the purpose of demonstrating architectural and HVAC mechanical systems which will maximize the effectiveness of an air curtain entrance way. The display model disassembles into convenient modules including a portable power unit to facilitate transportation and incorporates a number of novel constructional features which enhance the



demonstrative effectiveness of such architectural display models.

3,594,923
CHEMISTRY-TEACHING AID
Calvin P. Midgley, R.F.D. 1, Lake Villa, Ill.
Filed Jan. 17, 1969, Ser. No. 791,943
Int. Cl. G09b *23/24*
U.S. Cl. 35—18 R **11 Claims**



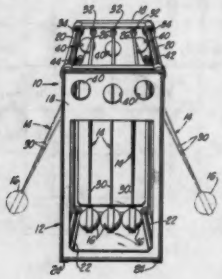
A chemistry-teaching aid for use in conjunction with the classroom demonstration of qualitative tests for the presence of selected elements in chemical substances, which includes a base member defining a periodic table or excerpts therefrom with a marked element space for each of a plurality of chemical substances which consists of or includes a selected element. A test index member, preferably a card, is provided for each of the selected elements which either matches the characteristic color produced in a laboratory test for the presence of the selected element in a compound, or indicates a precipitate by a vertical arrow, or both. Mounting means are provided on the base member in association with each of the element spaces for receiving the test index cards. Each card may have the chemical symbol for an element printed on one face.

3,594,924
DNA-RNA TEACHING AID
Kenneth H. Baker, State College, Pa., assignor to Nasco Industries Inc., Ft. Atkinson, Wis.
Filed June 25, 1969, Ser. No. 836,276
Int. Cl. G09b *23/26*
U.S. Cl. 35—18 A **2 Claims**

A model for representing chemical structures such as deoxyribonucleic acid and the like, and including a combina-

tion of individual units with projections and apertures formed as part of the units whereby the apertures are adapted to receive and removably retain the projections in a manner permitting relative movement between adjacent units within the model. One alternative embodiment includes the use of permanent magnets formed as a part of the units for connecting the units together in lieu of the projections and apertures. Means are provided for supporting the units in a desired shape.

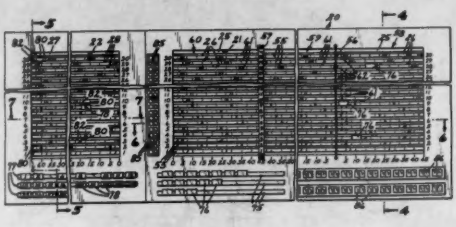
3,594,925
AMUSEMENT DEVICE
Jean Pierre Abbat, Los Angeles County, Calif., assignor to Brutoco Developement Co., Covina, Calif.
Filed Jan. 2, 1969, Ser. No. 788,437
Int. Cl. G09b *23/10*
U.S. Cl. 35—19 R **7 Claims**



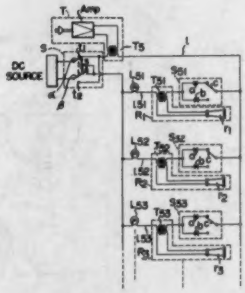
An amusement device comprising a generally parallelepiped-shaped frame member in which a plurality of spherical mass retaining yokes are freely suspended. The frame member includes a pair of sideplates detachably connected by a plurality of elongated braces, and the mass-retaining members are detachably mounted in the frame member, whereby the entire device may be assembled in a relatively compact package for carrying or storing.

3,594,926
APPARATUS AND METHOD FOR CORRELATING INFORMATION
Sydney C. Reed, 3948 Edgewood Ave. North, Minneapolis, Minn.; Robert C. Shiely, Dellwood, Minn., and James R. Wagner, Jr., 1845 Park St., White Bear Lake, Minn.
Filed May 19, 1969, Ser. No. 825,742
Int. Cl. G09b *29/06*; G09f *11/16*
U.S. Cl. 35—24 B **11 Claims**

A plurality of endless belts formed of magnetic material driven at a constant speed with a portion of each readily viewable by an operator, magnetic visual indicators engageable and disengageable from said belts for representing information, areas encompassing portions of said belts and representative of phases of a task, such as "time to job," "time on job," and "time to return from job," and an adjustable elongated rod associated with each belt for indicating the time required in at least two of the phases. A second board is also utilized, similar to the above-described board, for indicating time intervals of a specific task, said boards providing a visual representation of interrelated information.



3,594,927
QUESTIONEE'S RESPONSE-DETECTING DEVICE
Masami Koizumi, Kawasaki-shi, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan
Filed June 3, 1969, Ser. No. 829,922
Claims priority, application Japan, June 4, 1968, June 20, 1968, 43/38227;43/42834
Int. Cl. G09b *7/02*
U.S. Cl. 35—48 **1 Claim**



There is provided a questionee's response-detecting device comprising a plurality of questionee's answer selection switches, response indicating and/or recording means, a DC power source and a questioner's changeover switch interconnected between the power source and said questionee's answer selection switches, thereby indicating and/or recording the response of questionee's (Yes, No and No Answer) by the combinations of the questioner's changeover switch and the questionee's answer selection switches. If required, an audio communication system may be incorporated. The response indication and/or recording may be immediately and accurately made.

3,594,928
PAPER HAVING AREAS DISSOLVABLE IN WATER
Roland Henry Noel, Fayetteville, N.Y., assignor to Bristol-Myers Company, New York, N.Y.
Filed June 13, 1968, Ser. No. 736,828
Int. Cl. G09b *23/28*
U.S. Cl. 35—50 **3 Claims**

A method and article are provided with the method comprising instructing individuals in the effectiveness of bactericidal compositions by the steps of demonstrating to the individuals a graphic representation of micro-organisms upon paper or film which when immersed in water will result in the

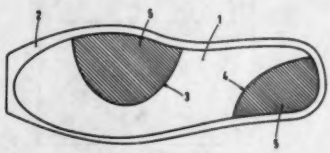
destruction of any graphic representation upon the surface of the paper or film, and immersing the paper or film in water. The preferred substrate is water-soluble paper prepared for

example from cellulose ether fibers which ethers are soluble in cold water, all as is more particularly described in the following specification.

3,594,929
FOOTWEAR

Rudolf Stohr, Tuttlingen, Wurttemberg, Germany, assignor to Dr. Justus Rieker & Co., Tuttlingen, Wurttemberg, Germany

Filed Sept. 18, 1969, Ser. No. 858,934
Claims priority, application Germany, Apr. 2, 1969, P 19 16 935.8
Int. Cl. A43b *13/38*
U.S. Cl. 36—44 **7 Claims**



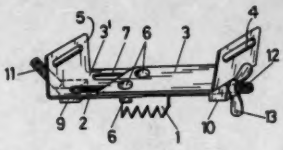
The invention relates to an article of skiing footwear wherein in order to damp or absorb impacts on the bone structure of the skier, there is provided in association with the sole a layer which, as distinct from known sole elements made from cellular plastics, is capable of further compression even under maximum shock loading, and the resilience of which in the zone of such maximum shock loading is greater than that of the remaining boot or shoe base under similar loading.

3,594,930
ANTISLIP CAM

Johann Felder, Kruseweg 10, 6060 Absam, Tyrol, Austria

Filed Sept. 18, 1969, Ser. No. 859,019
Claims priority, application Austria, Sept. 19, 1968, A 9129/68
Int. Cl. A43c *15/00*
U.S. Cl. 36—61 **4 Claims**

An antislip cam adapted to be releasably attached to a boot or shoe for walking on snow or ice-covered ground, including a plate fastened to the shoe and having the cam

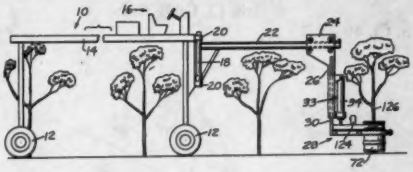


movably connected thereto for being positioned in operative or inoperative relationship relative to the ground.

3,594,931
APPARATUS FOR EXCAVATING PLANTS

Kenneth J. Yost, Eaton, Ohio, assignor to Campbell S. Brower, a part interest

Filed Nov. 12, 1968, Ser. No. 783,449
Int. Cl. A01g *23/04*
U.S. Cl. 37—2R **13 Claims**



A method and apparatus for excavating plants, especially shrubs and trees, in which a vertical digging cylinder, is provided, which is split longitudinally and is arranged to be opened and placed around a plant and then closed. The cylinder is then driven vertically into the ground. A cut is then made at the bottom of the cylinder to cut off the plug of ground taken by the cylinder and the plant and plug of ground can then be lifted and transplanted in a selected location.

The cylinder has a sleeve of wrapping material, tar paper, for example, therein which contains the periphery of the plug while a bottom cap is placed on the sleeve after the plant and plug are lifted from the hole.

The apparatus forms an attachment on the front end of a straddle-type vehicle so the apparatus can be moved about in a plant nursery or the like and an operator in an operator's station on top of the vehicle can observe the apparatus and control the operation thereof.

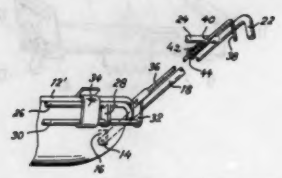
3,594,932
COMBINED SNOW PLOW AND GARDEN CART

Henning Emanuel Eriksson, 10 Furumostigen, S-952 00 Kalix, Sweden

Filed Feb. 20, 1969, Ser. No. 800,996
Claims priority, application Sweden, Oct. 7, 1968, 13480/1968
Int. Cl. E01h *5/02*; **B62b** *1/24*
U.S. Cl. 37—53 **1 Claim**

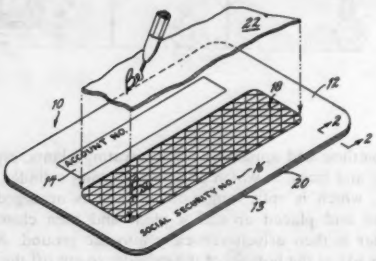
A combined snow plow and garden cart has holders swingably fixed to the plow and a locking device to lock the plow to the holders. The two sides of the plow are provided with separate arms swingable in a vertical plane, the ends of the arms opposed to their axle carrying wheels for rolling the plow and cart. The swinging movements of the arms take place between two positions. In the first position the front bottom portion of the plow extends substantially parallel to

the ground and lies against the ground. In the second position the front bottom portion is located at a substantial distance



from the ground, the distance being preferably approximately equal to the distance of the wheel axis from the ground.

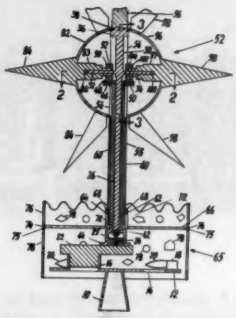
3,594,933
IDENTIFICATION DEVICE
Bernard William Cooper, Syosset, N.Y., assignor to Spectronics Corporation, Westbury, N.Y.
Filed Apr. 1, 1969, Ser. No. 813,402
Int. Cl. G09f 3/02
U.S. Cl. 40—2.2 **9 Claims**



An identification device is provided which includes a substrate having a portion of one surface constructed so as to be absorbent and capable of permanently accepting an invisible indicia such as a signature. The said portion of said substrate is of self-destructing safety printing so that tampering therewith is readily ascertainable and will obscure a slight visible cast resulting from transferring invisible indicia thereto. The substrate is preferably comprised of a paper layer on opposite sides of a tough polymeric plastic such as Mylar bonded thereto. The identification device is preferably in the form of an identification or credit card bearing a signature, which signature may only be seen when subjected to radiant energy such as ultra violet light.

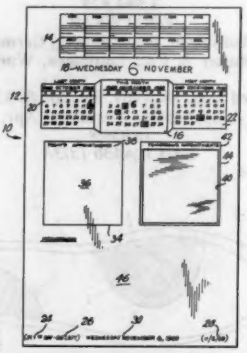
3,594,934
ROTATING ORNAMENT
Jack Burnbaum, 451 D St., Boston, Mass.
Filed Nov. 14, 1968, Ser. No. 775,879
Int. Cl. G09f 11/10
U.S. Cl. 40—33 **13 Claims**

A rotating ornament has a vertically extending shaft, and display member mounted thereon having a central section fixed on said shaft and horizontally rotatable therewith, and two side sections each carrying a wheel and being vertically rotatable independently of said central section. Two oppositely and laterally extending axles are fixed on said shaft on which said two side sections are rotatably mounted. Said



wheels cause said side sections to rotate vertically as they travel on a track when said display member is rotated.

3,594,935
MEMORANDUM PAD
Joel Blattstein, 3419 Irwin Ave., New York, N.Y.
Filed Nov. 26, 1969, Ser. No. 880,309
Int. Cl. G09d 3/00
U.S. Cl. 40—107 **11 Claims**

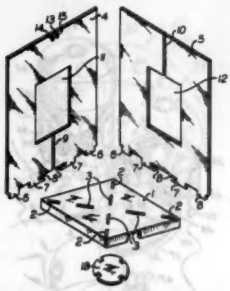


Memorandum pad having stacked sheets corresponding to days of the year, each succeeding sheet being provided with alternating windows or cutouts through which memorandum may be written on and read from the succeeding sheet without moving or removing the overlying sheet enabling memoranda, appoints, birthdays, events, and the like, to be entered in a single writing and read for two succeeding days and therefore a succeeding day's appointments, events and the like to be previewed on a preceding day.

3,594,936
DISPLAY APPARATUS
Paul Blum, Stamford, Conn., assignor to Paul Blum, Elmsford, N.Y.
Filed Feb. 4, 1970, Ser. No. 8,575
Int. Cl. G09f 1/00
U.S. Cl. 40—124.1 **8 Claims**

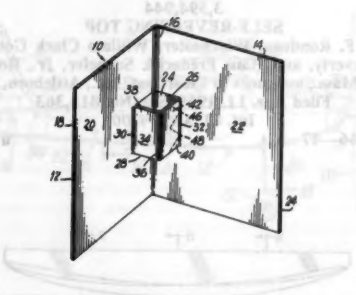
A display apparatus comprising a base means having slot means therein; at least two panels disposed in crossing relation to each other extending generally normal to the base means and having tab means inserting through the slot means, at least some of which tab means are themselves slotted below the level of the base means with all said tab

slots being inwardly directed toward the axis of said crossed panels; locking means disposed in said tab slots abutting the underside of said base means; and alignment means disposed centrally on the end of one of said panels opposite to said base means receiving the end of the other of said panels



therein and aligning both panels in predetermined fixed relationship to each other and to said base. A space may be provided in one or both panels to hold and/or maintain a display item, preferably in apparent suspension above the base means.

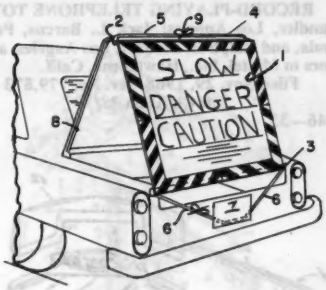
3,594,937
SOUND-EMITTING DEVICE
Charles R. Luchsinger, Glen Cove, N.Y., assignor to Norcross, Inc., New York, N.Y.
Filed Nov. 28, 1969, Ser. No. 880,658
Int. Cl. G09f *1/00*
U.S. Cl. 40—124.1 **10 Claims**



A display device has a pair of panels foldable along a fold line. Portions of each panel adjoining a common section of the fold line are moveable outwardly from the panel during folding. These portions are defined by cuts in the panels which intersect the fold line with other fold lines connecting corresponding ends of these cuts. One of the panels has a layer beneath its corresponding moveable portion. A flexible arm mounted on one portion of the moveable panel slideably rubs the facing surface of the lower layer during opening movement of the panels, thereby emitting a sound.

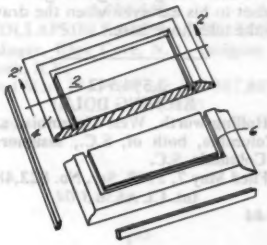
3,594,938
WARNING DEVICE
Alfred Mosch, 442 Popular St., Bridgeport, Conn.
Filed July 2, 1968, Ser. No. 741,970
Int. Cl. G09f *7/00*
U.S. Cl. 40—129 C **2 Claims**

A warning device for vehicles having a rear portion, the device comprised of a rectangular warning sign made of a flexible sheet material having upper and lower edge portions; attachment means are connected to the edge portions for mounting the device to the vehicle. The attachment means



are individually removably connected to the rear of said vehicle when the device is being displayed.

3,594,939
PICTURE FRAME
Henry P. Parker, 700 W. Bayview Ave., Biloxi, Miss.
Filed Aug. 22, 1969, Ser. No. 852,213
Int. Cl. G09f *1/12*
U.S. Cl. 40—156 **8 Claims**



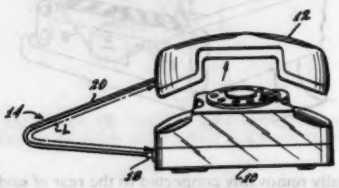
An improved picture frame of solid construction having a plurality of grooves therein which receive a plurality of inserts which are placed within the grooves over the edges of a flexible material so that the flexible material is stretched and secured to the picture frame.

3,594,940
ASSEMBLY TOY SET
Yoshitaka Yonezawa, Tokyo, Japan, assignor to Yonezawa Toys Co., Ltd., Tokyo, Japan
Filed Aug. 19, 1968, Ser. No. 753,539
Int. Cl. A63h *33/04*
U.S. Cl. 46—16 **3 Claims**

This assembly toy set comprises baseboards having a plurality of arranged holes in one planar surface thereof and fittings such as rail, signal, house, tree and the like which

fittings are provided with many protuberances adapted to be snugly received in said holes.

3,594,941
RECORD-PLAYING TELEPHONE TOY
Elliot Handler, Los Angeles; Jack L. Barcus, Palos Verdes Peninsula, and Ralph H. Stewart, Los Angeles, all of, Calif., assignors to Mattel, Inc., Hawthorne, Calif.
Filed Nov. 29, 1968, Ser. No. 779,873
Int. Cl. A63h 33/30
U.S. Cl. 46—33 1 Claim

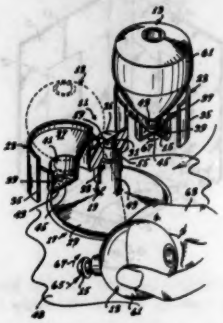


A toy telephone with a spring-powered phonograph in the telephone base that is operated by a drawstring. The drawstring is attached to the telephone handset, in the manner of a telephone cord, so that the phonograph is operated by pulling the handset away from the base and then releasing it. The drawstring is long enough to allow a child to hold the handset to his ear even when the drawstring is fully rewound into the telephone base.

3,594,942
KICKING DOLL
Charles M. Hollingsworth, West Columbia, and Witold W. Kosicki, Columbia, both of, S.C., assignors to Horsman Dolls Inc., Columbia, S.C.
Filed May 7, 1969, Ser. No. 822,486
Int. Cl. A63h 3/04
U.S. Cl. 46—44 6 Claims

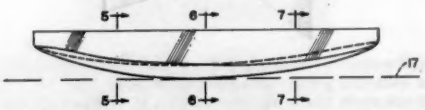
A kicking doll in which a system responsive to pressure exerted on the arms of the doll causes its legs to move from normal positions, which they occupy under the influence of gravity when the doll is erect or is lying on its back, toward resilient stops which define kicking limit positions intermediate the normal and sitting positions of the legs. The legs may be manually moved past the resilient stops to a sitting position determined by positive stops.

3,594,943
TOY TOP PIVOT ACCESSORY
John W. Ryan, and Gabriel Marason, Jr., both of Los Angeles, Calif., assignors to Mattel, Inc., Hawthorne, Calif.
Filed June 8, 1970, Ser. No. 44,413
Int. Cl. A63h 1/32
U.S. Cl. 46—47 5 Claims



A twirling structure having a pair of oppositely disposed spinning toy-top-holding portions is supported at its centrally located axis of rotation by an upstanding pedestal portion of a stand or base. The holding portions may be in the form of cups and centrally disposed holes are located at the bottom of the cups in order to center the tops and to allow the tops' rotating starting tip to come into contact with the cup structure and thereby impart thereto a mechanical couple and cause the structure to twirl about its rotational axis.

3,594,944
SELF-REVERSING TOP
Herbert F. Rondeau, Winchester; William Clark Goodchild, Jr., Beverly, and Hans Frederick Schaefer, Jr., Rockport, all of, Mass., assignors to Clearfloat, Inc., Attleboro, Mass.
Filed Apr. 11, 1969, Ser. No 815,363
Int. Cl. A63h 1/00
U.S. Cl. 46—47 6 Claims

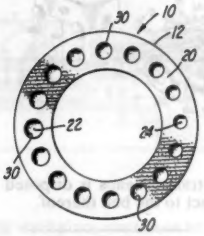


A self-reversing top is provided which, when spun in one direction, will rotate first in that direction and then will reverse its direction of rotation. The top is of integrated rigid construction having a curved lower contact surface the direction of least curvature of which is angularly offset from the principal axis of inertia.

3,594,945
FLYING TOY
Howard R. Turney, 1180 Holly St., Anaheim, Calif.
Filed Apr. 14, 1969, Ser. No. 815,784
Int. Cl. A63h 27/00
U.S. Cl. 46—74 R 6 Claims

A manually projectable flying toy comprising an annulus the cross section of which in any radial plane containing its

axis is that of an airfoil having a convex upper surface, the axial thickness of the annulus varying uniformly circumferentially thereof and being a maximum and a minimum at points 180° apart.

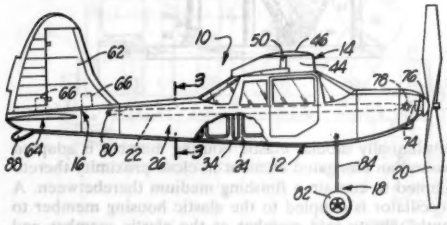


3,594,946

PLASTIC MODEL CONSTRUCTION

Leslie DeWitt, Jr., 2434 N. Durfee, El Monte, Calif.

Filed Feb. 6, 1969, Ser. No. 797,102
Int. Cl. A63h *27/00*
U.S. Cl. 46—76 R 16 Claims



A molded plastic model, such as a model airplane, having a molded plastic body consisting of mating body shells which are mutually joined along adhesively bonded seams, and thin molded plastic skin sections which are applied over and secured to the sides of the body in such a way as to obscure the seams and reinforce the body. An improved molded plastic wing construction is provided for the model airplane.

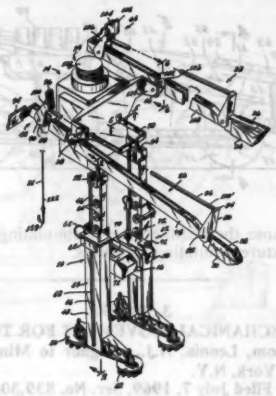
3,594,947

SPACEMAN CARRIER TOY

Donald C. Hartling, Garden Grove; Robert E. Hulse, Torrance; Gary W. Pimentel, Downey, and John W. Ryan, Los Angeles, all of, Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed Nov. 29, 1968, Ser. No. 779,982
Int. Cl. A63h *13/00*
U.S. Cl. 46—116 7 Claims

A toy for a spaceman doll to provide the effect of amplification of the stride and reach of the doll. The carrier comprises a pair of adjustable stilts with clamps for holding the boots of a spaceman doll. A frame which simulates a backpack for the doll, pivotally joins the stilts near their top to enable movement of the stilts apart and together to simulate giant doll strides. Long grasping tools on each side of the doll simulate apparatus for extending its reach.

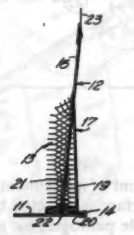


3,594,948

COLLAPSIBLE DISPLAY DEVICE

Charles Luchsinger, Glen Cove, N.Y., assignor to Norcross, Inc., New York, N.Y.

Filed Mar. 17, 1969, Ser. No. 807,807
Int. Cl. A63h *11/00*
U.S. Cl. 46—119 10 Claims



A collapsible puppet display device includes a paper honeycomb accordion, vertically extensible body member connected at its bottom to a flat base member provided along its rear with an upstanding stop and at its top to a head member having a depending hinged flap and depending coplanar laterally spaced arms. The device is collapsible to a flat condition, is self-supporting by swinging the flap into engagement with the stop member, and is string manipulative.

3,594,949

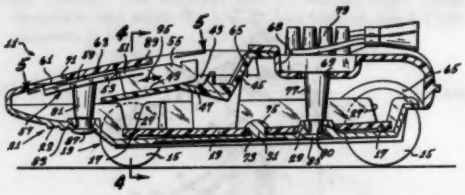
TOY VEHICLE HAVING SIMULATED HEADLIGHTS WITH ON-OFF CONTROL

Paul Tam, Los Angeles, Calif., assignor to Mattel, Inc., Hawthorne, Calif.

Filed Mar. 6, 1970, Ser. No. 17,110
Int. Cl. A63h *17/26*
U.S. Cl. 46—202 10 Claims

A member having headlight beam simulating indicia, such as white paint, is slidably mounted in a toy vehicle having

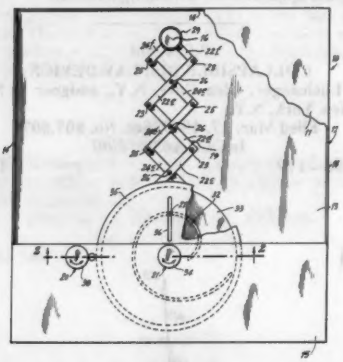
headlight fixture simulating apertures whereby the headlights of the vehicles may be "turned-on" by moving the member so as to expose the headlight beam simulating indicia in the headlight fixture simulating apertures.



3,594,950
MECHANICAL MOVEMENT FOR TOYS

William Bloom, Leonia, N.J., assignor to Miner Industries, Inc., New York, N.Y.

Filed July 7, 1969, Ser. No. 839,303
Int. Cl. A63h 33/26
U.S. Cl. 46—240 9 Claims



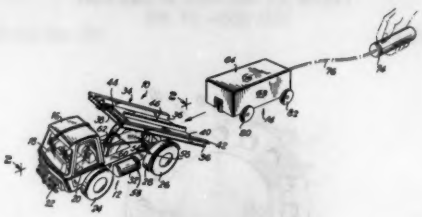
In a toy, the movement of an element in randomly selected paths over a planar surface is effected by a longitudinally extendable and retractable pantographic arm assembly which is swingable in a plane parallel to such surface about an axis at one end of the arm assembly and which carries the element at the other end of the arm assembly, and individually operable drives are connected with the arm assembly intermediate its ends to selectively cause swinging thereof and extension and retraction of the arm assembly.

3,594,951
WHEELED TOY TRACTOR WITH SEPARABLE MOTORIZED TRAILER MEANS

Leslie Perhacs, Jr., Topanga, Calif., assignor to Cragstan Industries, Inc., New York, N.Y.

Filed Apr. 23, 1969, Ser. No. 818,667
Int. Cl. A63h 17/05, 30/00
U.S. Cl. 46—244 A 14 Claims

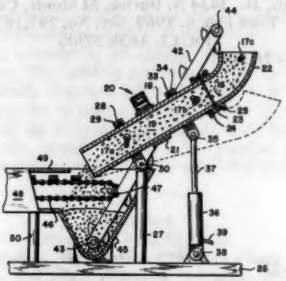
Toy vehicle comprising tractor means having a cab, a chassis and a bed, said tractor means being constructed and arranged to enable said bed to be moved between elevated and nonelevated positions with respect to said chassis, and trailer means constructed and arranged to be operated by remote control, and moveable between a position in which it is separated from said tractor means, and a position in which it is disposed in cooperative association with respect to the bed thereof, and having a driving means for driving said tractor means when said trailer means is disposed in a cooperative position with respect to the bed thereof.



3,594,952
SONIC POLISHING APPARATUS

Howard E. McKinney, La Jolla, Calif., assignor to Shell Oil Company, New York, N.Y.

Continuation-in-part of application Ser. No. 710,993, Mar. 6, 1968. This application Oct. 24, 1968, Ser. No. 770,222
Int. Cl. B24b 19/00
U.S. Cl. 51—7 4 Claims



A substantially tubular elastic housing member is adapted to surround an elongated element in close proximity thereto and adapted to contain a finishing medium therebetween. A sonic oscillator is coupled to the elastic housing member to resonantly vibrate said member as the elastic member and elongated element are axially moved relative to one another.

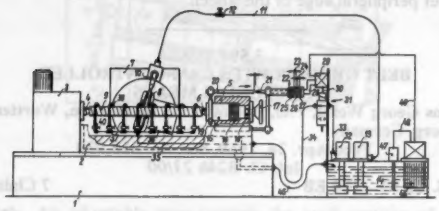
3,594,953
COOLING ARRANGEMENT FOR THREAD-GRINDING MACHINES

Gerhard Stade, Berlin, Germany, assignor to Herbert Lindner G.m.b.H., Berlin, Germany

Filed Apr. 15, 1969, Ser. No. 816,211
Claims priority, application Germany, July 2, 1968, P 17 52 684.0
Int. Cl. B24b 5/00, 3/00, 55/02
U.S. Cl. 51—48 10 Claims

In a thread-grinding machine including a grinding table supporting a grinding wheel between two work centering spindles, of which a tail stock centering spindle is biased toward the other spindle, and further including a discharge nozzle, for a first coolant flow, at the grinding wheel support, a workpiece cooling arrangement includes a series of second discharge nozzles for a second controllable coolant flow, arranged at the grinding table in the area between the centering spindles. Valve means control the second coolant flow, and electric precision feeler means are operatively associated with the spring biased table stock centering spindle to open the valve means responsive to a predetermined axial expansion of the workpiece. The valve means include a magnet

valve and a motor valve. A cooling unit is disposed in a reservoir for the second coolant, and is activated whenever the



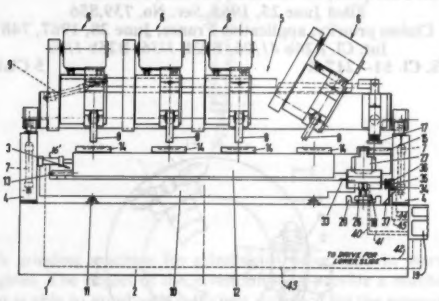
temperature of the workpiece continues to increase as determined by axial expansion of the workpiece.

3,594,954

DEVICE FOR COPYING ON POLISHING OR BRUSHING MACHINES FOR HOLLOW ARTICLES

Karl Eugene Becker, Geislingen; Karl Oberlander, Geislingen; Hugo Fessler, Geislingen, and Kurt Jager, Miesbach, all of, Germany, assignors to Wurttembergische Metallwarenfabrik, Geislingen, Steige, Germany

Filed Oct. 3, 1968, Ser. No. 764,893
Claims priority, application Germany, Oct. 4, 1967, P 16 52 238.6
Int. Cl. B24b *17/06, 9/00*
U.S. Cl. 51—100 3 Claims



A polishing and brushing machine having a cross-slide arrangement adapted to receive workpieces thereon for moving same relative to a polishing wheel. The movement of the workpiece is automatically controlled by means of a template mounted on the machine frame, which template coacts with a switching stylus mounted on the cross-slide for controlling the movement thereof. The template permits selective polishing of the entire workpiece or of the edge areas.

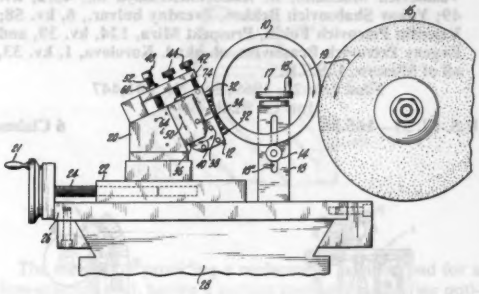
3,594,955

UNIVERSAL SHOE GUIDE FOR A CENTERLESS GRINDING MACHINE

Bertrand Collin, New Britain, and Victor J. Baccaro, Southington, both of, Conn., assignors to Textron Inc., Providence, R.I.

Filed Sept. 9, 1968, Ser. No. 758,522
Int. Cl. B24b *5/18*
U.S. Cl. 51—103 14 Claims

The invention contemplates a universal fixture adjustably supporting a set of selectively locked spring-loaded pins which may be released to conform to the workpiece diameter to be supported, and which may be locked to retain the cor-



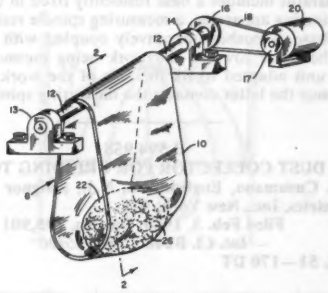
rect work-support arc for the particular workpiece. Fixtures for internal grinding and for external grinding are shown.

3,594,956

POLISHING METHOD AND DEVICE

George M. Conover, P.O. Box 1497, Bartlesville, Okla.

Filed Dec. 26, 1968, Ser. No. 787,138
Int. Cl. B24b *1/00*
U.S. Cl. 51—163 9 Claims

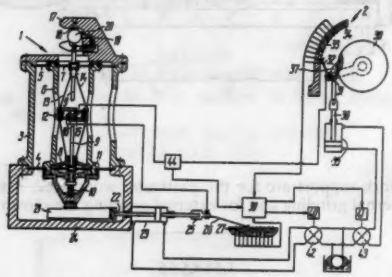


An improved method and means for grinding and polishing articles. The items to be polished and the desired or required amount of grit-bearing grinding liquid, are sealed within a disposable, leakproof bag, and the bag and contents are then tumbled until the desired amount of polishing is effected. The disposable leakproof bag may be prepackaged as the container for a premeasured amount of grinding grit, and be of such a predetermined capacity that when filled to a prescribed level with the liquid and items to be polished, the proper proportion or ratio of liquid to grit will automatically be effected. The rotating device is preferably the inside lower end of a broad, closed belt loop gravitationally suspending from, and driven by, an overhead rotatable shaft. For finer polishing, successive stages employing increasingly finer grinding grit may be employed.

3,594,957
DEVICE FOR COMPENSATING FOR GRINDING WHEEL WEAR

Isaak Mironovich Goldberg, Furmanny per., 18, kv. 40; Vyacheslav Borisovich Elman, ul. akad. Komarova, 14, kv. 19; Valentin Mikhailovich Volkov, Kalibrovskaya ul., 2-a, kv. 48; Jury Efimovich Gorsky, 3 Parkovaya ul., 52, kv. 30; Anatoly Pavlovich Shugaev, Zamorinsky per., 9, kv. 15; Edgar Borisovich Ostrovsky, Naprudny per., 9, kv. 3; Lev Vasilievich Mochalin, B. Akademicheskaya ul., 43/2, kv. 49; Yakov Shabsovich Bekker, Zvezdny bulvar., 6, kv. 58; Valentin Petrovich Fokin, Prospekt Mira, 124, kv. 39, and Evgeny Petrovich Braslavets, ul. akad. Koroleva, 1, kv. 33, all of Moscow, U.S.S.R.

Filed Feb. 24, 1969, Ser. No. 801,447
Int. Cl. B24b *49/04*
U.S. Cl. 51—165.88 6 Claims

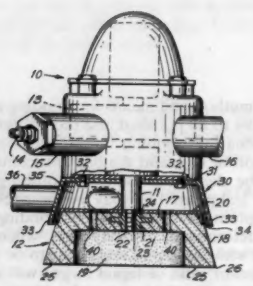


A device for compensating for the wear of a grinding wheel in a grinding machine comprises an actuating mechanism adapted for effecting movement of the grinding wheel to compensate for the wear of the latter in conformity with the results of measurement of the work being machined. The apparatus further includes a measuring apparatus adapted to act upon the actuating mechanism. The measuring apparatus includes a base resiliently fixed in the casing of the measuring apparatus, a measuring spindle resiliently fixed in the base, a pusher operatively coupled with the base to move the latter towards the work being measured, and an output unit adapted to fix the size of the work being measured once the latter contacts the measuring spindle.

3,594,958
DUST COLLECTOR FOR GRINDING TOOL

Guy F. Cusumano, Englishtown, N.J., assignor to Clarkson Industries, Inc., New York, N.Y.

Filed Feb. 3, 1969, Ser. No. 795,901
Int. Cl. B24b *25/00, 55/06*
U.S. Cl. 51—170 DT 8 Claims

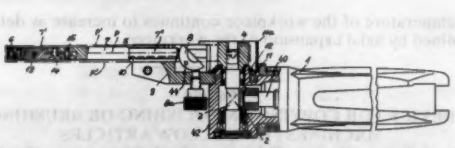


The disclosure is directed to an improved dust collector for a manually operable grinder comprising a hood overlying the top of a cupstone grinding wheel and having a depending skirt to form a dust-collecting chamber and at least one passage through the back wall of the cupstone wheel for connecting its hollow center to the dust-collecting chamber. With the added passages in the back wall of the cupstone wheel the edge of the depending skirt of the hood may be located at a height so as not to interfere with the use of the lower peripheral edge of the wheel.

3,594,959
BELT GRINDER WITH CAM-CONTROLLED TENSIONING MEANS

Hans Georg Wezel, P.O. Box 60, 7533 Maulbronn, Wurttemberg, Germany

Filed Apr. 24, 1969, Ser. No. 818,939
Int. Cl. B24b *23/00*
U.S. Cl. 51—170 EB 7 Claims

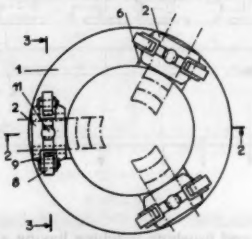


A driving pulley is rotatably mounted in a frame in contact with an endless driving belt and is power operable to drive the same. A roller is adapted to contact the belt. A tensioning finger carried by the frame carries the roller and extends inside the belt between the pulley and roller. Cam means carried by said frame is operatively arranged to engage the finger and move the roller for adjusting tension in the belt.

3,594,960
APPARATUS FOR HOLDING CHUCK JAWS FOR SHAPING

Louis Fourquier, 26 Montelier, Drome, France

Filed June 25, 1968, Ser. No. 739,856
Claims priority, application France, June 28, 1967, 748
Int. Cl. B24b *41/06*; B23b *3/36*; B25b *1/00*
U.S. Cl. 51—217 R 5 Claims



A device having an annular plate with a plurality of clamps angularly disposed and arranged on one face of the plate to immobilize the jaws of a chuck for retouching of the bearing faces.

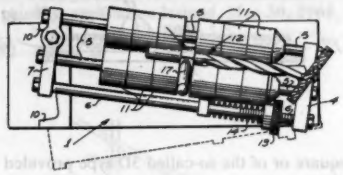
3,594,961
HOLDER FOR SHARPENING TWIST DRILLS

William C. Reynolds, P.O. Box 403, Morro Bay, Calif.

Filed Oct. 13, 1969, Ser. No. 865,629
Int. Cl. B24b *3/26*
U.S. Cl. 51—219 R 14 Claims

A holder for sharpening twist drills wherein the drill rests between sets of rollers mounted on a pair of parallel shafts. The shafts form part of a frame which pivots a limited amount about an axis perpendicular to the axis of the drill. A clamp is secured to the drill, and is provided with diametrically disposed shafts either one of which is insertable

between a pair of fixed rods underlying the rollers which cause the drill to turn on its axis as the frame is moved arcu-

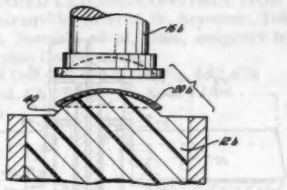


ately. An adjustable stop controls the axial position of the drill. A modification involves the use of a slotted V-guide.

3,594,962
GRINDING MACHINES
Stig Oskar Christensson, Malmo, Sweden, assignor to Chris-Marin AB, Malmo, Sweden
Filed May 7, 1969, Ser. No. 822,470
Claims priority, application Sweden, May 10, 1968, 6318/68
Int. Cl. B24b *15/02*
U.S. Cl. 51—241 A 4 Claims

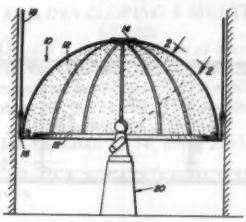
A grinding machine for grinding of valve seats in marine engines. The object of the invention is to provide a machine that is able to grind with sufficient accuracy for the pressures and temperatures at which marine engines operate and to provide a machine which at the same time is easy to apply and to operate. This has been achieved thereby that the machine is provided with a frame which is rotatable about a shaft adapted to be arranged in a valve stem bore and carries an arm which is mounted to be displaceable in an inclined track which is arranged in the frame and extends in a plane coinciding with the longitudinal direction of the shaft, the said arm carrying a holder for a grinding wheel and a driving motor associated with the said wheel, and also being displaced by means of a screw-threaded spindle which is mounted to be rotatable but axially nondisplaceable in the frame, the said screw-threaded spindle being provided at its upper end with a conveniently removable handle for turning the frame about the shaft, means being provided for converting a relative movement, brought about on rotation of the frame by means of the handle, between the frame and the screw-threaded spindle into a displacement of the arm, so that the grinding wheel, depending on the direction of rotation of the frame, is displaced either obliquely upwards and outwards or downwards and inwards in the direction from or towards the shaft.

3,594,963
GRINDING PAD
George A. Beasley, Fort Lauderdale, Fla., assignor to Univis, Inc., Fort Lauderdale, Fla.
Division of Ser. No. 662,379, Aug. 22, 1967
Filed July 17, 1969, Ser. No. 870,712
Int. Cl. B24d *11/02*
U.S. Cl. 51—293 9 Claims



The method of providing a replaceable grinding pad for a lens-grinding tool, having a surface thereon for grinding optical and ophthalmic lenses. The pad is formed about the curve-determining surface of the grinding tool, thus providing the grinding surface of the pad with substantially the same curvature as that of the tool. The pad is formed by interposing a sheet metal blank between the tool and a die member of an elastic material and thereafter deforming the blank with the tool by depressing it into the elastic material, whereby to form a grinding pad having the same configuration as that of the tool.

3,594,964
PLANETARIUM PROJECTION DOME
William T. Clark, Jackson, Miss., assignor to Observa-Dome Laboratories, Inc.
Filed June 17, 1969, Ser. No. 834,050
Int. Cl. E04b *1/32*; E04d *13/03*; G09b *27/00*
U.S. Cl. 52—81 6 Claims

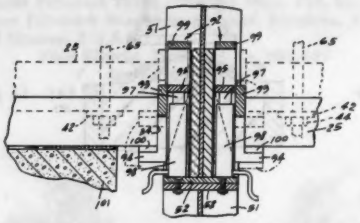


A self-supporting planetarium projection dome constructed of a plurality of segments connected together to form a hemispherical dome. The segments include oppositely disposed marginal flanges which are connected together to form circumferentially extending joints. Arcuate cover strips in the form of T-shaped members are clamped between the marginal flanges of the joints to cover the joints and present a continuous interior dome surface for realistically reflecting projected celestial images.

3,594,965
PRECAST BUILDING CONSTRUCTION
Kolbjorn Saether, 934 Linden, Wilmette, Ill.
Filed Oct. 1, 1968, Ser. No. 764,228
Int. Cl. E04b *1/34*; E04g *21/00*
U.S. Cl. 52—126 21 Claims

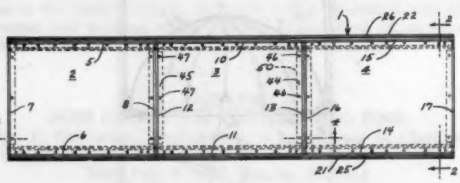
Floor slabs are precast in situ one upon another, temporary steel lifting columns are mounted through aligned clearance holes in the stack of slabs, a holding carriage and a lifting carriage are operatively disposed about each of the columns, threaded tension rods are coupled to removable tension rod

sections properly located and coupled to the slabs, lifting jacks mounted on the lifting carriage actuate the tension rods to lift the entire stack of slabs to a height adjacently above the final elevation of the lowermost of the slabs in the stack, the pack of slabs is held by the holding carriage until the lifting carriage is raised to a further lifting height, the lowermost slab in the stack is temporarily supported at its highest elevation and is released from the lifting tension rods so that the remaining slabs can be raised and the successive lowermost



slabs dropped off at their predetermined elevated positions, while angular wall columns are mounted in position to provide the ultimate support for the lowermost slab which is then lowered onto such columns and released from the temporary holding means. After all of the slabs have been erected, the lifting equipment is removed for reuse. To facilitate handling and placement of the wall columns one or more cranes may be mounted on and ride up with the topmost slab.

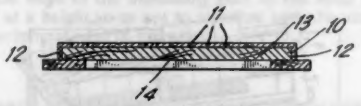
3,594,966
TILE TRIM FOR TRENCH DUCT COVER PLATES
Stephen M. Janic, Parkersburg; Michael J. Cottrell, Washington, and Frederick W. Hudnall, Vienna, all of, W. Va., assignors to Textron Inc., Providence, R.I.
Filed Aug. 14, 1969, Ser. No. 850,031
Int. Cl. E04f *17/08*
U.S. Cl. 52—173 **2 Claims**



A trench duct cover having, in the shipping condition, trim along each longitudinal edge and a filler piece along each transverse edge, the trim and filler pieces being flush with the surface of the cover and the cover, in its installation condition, having the trim along the longitudinal edges reversed with portions extending above the cover surface and a spacer along one transverse edge and an offset along the other transverse edge for interlocking with the adjacent cover, both the spacer and offset having portions extending above the cover surface, all of said above-the-surface portions being for use in protecting floor covering on the cover.

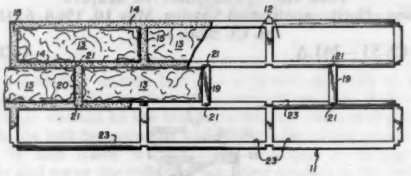
3,594,967
CEILING BOARDS
Frank Flagiello, 2055 East 55th St., Brooklyn City, N.Y.
Filed May 5, 1969, Ser. No. 821,722
Int. Cl. E04b *5/54*
U.S. Cl. 52—309 **1 Claim**

Ceiling boards are made of pressed cardboard, wood or other suitable material and have an outer surface coated with colored flakes carried by polyurethane. This outer surface may be rough or provided with a smooth finish. The boards



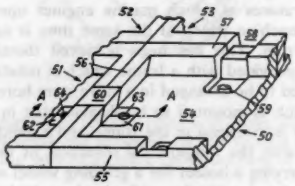
may be square or of the so-called 3D type provided with projecting edges.

3,594,968
WALL DECORATION
Harold G. Johnson, 6 Stanley Road, East Brunswick, N.J.
Filed May 6, 1969, Ser. No. 822,130
Int. Cl. E04d *13/08*
U.S. Cl. 52—390 **1 Claim**



A wall decoration providing a plurality of frames and spacers to be adhesively attached to a wall, and defining spaced openings in and between the frames for decorative blocks to be inserted in the openings and adhesively secured to the wall; covering strips are secured to the frames around the blocks.

3,594,969
MOUNTING FRAME
Josef Lejzor Kantorowicz, 15, Habsburgstrasse, 5200 Windisch, Switzerland
Filed Sept. 16, 1968, Ser. No. 759,954
Claims priority, application Switzerland, Sept. 28, 1967, July 16, 1968, 13536/67;10608/68
Int. Cl. E04f *13/14*
U.S. Cl. 52—392 **8 Claims**



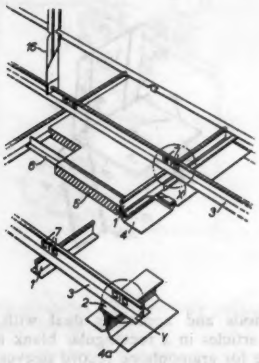
The invention relates to mounting frames for receiving coverings for surfaces such as walls, floors or ceilings of rooms which are detachably fastenable together by projection and recess connections, bolted connections, or by separate connections. The mounting frames are formed of a baseplate and sidewalls, the latter of which have associated with them a device enabling the connections between adjacent mounting frames to be made. Such devices are generally in the form of one or more parts of the connections.

3,594,970

WALL AND CEILING CONSTRUCTIONS

Gabriel John MacGrath, and Liam Patrick MacGrath, both of 6, Oulton Road, Clontarf, Dublin, Ireland

Filed June 2, 1969, Ser. No. 829,384
Claims priority, application Ireland, May 30, 1968, 646/68
Int. Cl. E04b 5/52
U.S. Cl. 52—484 7 Claims



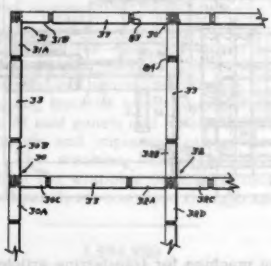
A ceiling or wall construction for use in buildings comprising a first set of spaced, parallel sheet metal members extending over the ceiling or wall area, disposed in the plane of the desired ceiling or wall, surface elements mounted between and supported by the members, a second set of spaced, parallel, sheet metal members of T-shape extending over the same area, arranged behind and at right angles to the members of the first set, connecting means between the two sets of members, and adjustable sheet metal spacer members each formed in two parts, with one part having at one end means in which is engaged a member of the second set and the other part having one end adapted to be affixed to a fixed part of the building.

3,594,971

BUILDING CONSTRUCTION AND COMPONENTS THEREOF

John K. Hughes, Hunnewell Road, Scarboro, Maine

Filed June 26, 1969, Ser. No. 836,782
Int. Cl. E04b 1/20; E04c 3/20
U.S. Cl. 52—648 16 Claims



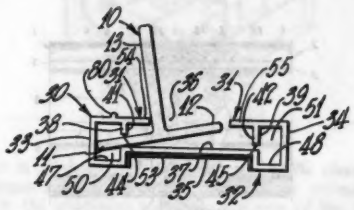
Building constructions are disclosed in which the framework comprises preformed, reinforced concrete columns, beam modules having angularly disposed beam portions, and intermediate beam members. Means are provided to interconnect the reinforcements of vertically aligned columns through the module supported by one column and in support of another column. The beam portions and the beam members include end plates secured to their reinforcements, the end plates including complemental structure enabling each intermediate beam member to be supported by beam portions prior to the joining of the engaged plates by a weld. The modules and columns provide for the marginal support of wall panels and the beam portions of the modules have marginal shoulders for support of floor structure.

3,594,972

SUSPENDED CEILING CONSTRUCTION

Isaac P. Jones, Granville; Merritt W. Seymour, Toledo, and Jared R. Kies, Newark, all of, Ohio, assignors to Owens-Corning Fiberglass Corporation

Filed Dec. 21, 1967, Ser. No. 692,476
Int. Cl. E04b 5/57; E04f 11/06
U.S. Cl. 52—716 7 Claims



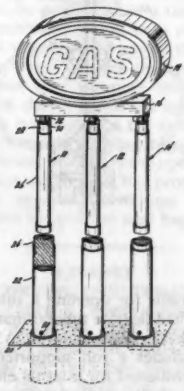
A cap member and suspended ceiling construction employing the cap member with structural beams having laterally extending portions where such cap member is a longitudinal hollow member including a lengthwise opening communicating with the interior thereof through which laterally extending portions of a structural beam can be inserted for support of the hollow member by the laterally extending portions of the structural beam. The hollow member further including an internal aligning means for holding the hollow member in lateral alignment in its supported relation on the beam.

3,594,973

METHOD FOR DEVELOPING A MULTIPLE-POLE STAND

Bill Archer, and John L. Low, III, both of Meridian, Miss., assignors to Arlo, Inc., Jackson, Miss.

Continuation-in-part of application Ser. No. 676,286, Oct. 18, 1967, now Patent No. 3,471,980. This application June 23, 1969, Ser. No. 835,816
Int. Cl. E04h 12/34; E04g 25/04
U.S. Cl. 52—741 4 Claims



Telescoping columns, particularly a method for developing a plurality of telescoping forms as a rigid stand for a roadside

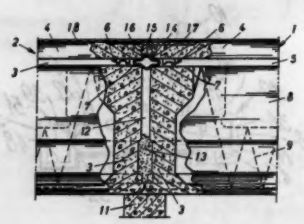
sign, high tension wires or the like, by anchoring a plurality of forms to a rigid base and pumping the forms simultaneously with fluid concrete, so as to vertically telescope the forms above the rigid base.

3,594,974

METHOD OF ASSEMBLING SUPPORTING STRUCTURES UTILIZING AN INFLATABLE TUBE

Per Olof Jonell, Goteborg, and Sven Melker Nilsson, Kallered, both of, Sweden, assignors to Ingeniorsfirman Nilcon Aktiebolag Vannedal Ostergard, Kallered, Sweden

Filed Sept. 29, 1969, Ser. No. 861,784
Claims priority, application Sweden, Sept. 30, 1968, 13166/1968
Int. Cl. B28b 7/32; E04g 11/04
U.S. Cl. 52—743 2 Claims



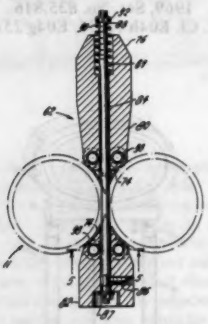
A joint between concrete coffer beams and between slabs which are placed on the beams with sound insulation between the slabs and beams. A rubber tube is located at the joint, and is inflated while the slab joint is filled. The tube is then deflated, and possibly withdrawn, and this leaves a clean unbridged gap which prevents the sound insulation being impaired at this juncture.

3,594,975

BANDING APPARATUS

William A. Abrecht, Short Hills, N.J., assignor to Dart Industries, Inc., Los Angles, Calif.

Filed Sept. 11, 1969, Ser. No. 856,951
Int. Cl. B65b 13/00; B67b 5/00
U.S. Cl. 53—3 16 Claims



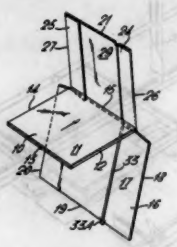
A banding apparatus for opening a substantially continuous ribbon of flattened flexible tubular material such as cellulose and severing that opened material to the desired length. Such apparatus includes a roll supported floating material which is actively positioned for internal engagement with the material by a pair of driven feed rollers. An electronic or similar control system synchronizes the feeding, cutting and positioning of an article to be enclosed by the severed sleeve of material.

3,594,976

METHOD OF WRAPPING ARTICLES OF A SHAPE OF THIN RECTANGULAR PARALLELEPIPEDS

Donald R. P. Jackson, London, England, assignor to Masson Scott Thrissell Engineering Limited, London, England

Filed Nov. 29, 1968, Ser. No. 779,685
Claims priority, application Great Britain, Dec. 1, 1967, 54714/67
Int. Cl. B65b 11/48; B65d 65/04, 75/20
U.S. Cl. 53—31 2 Claims



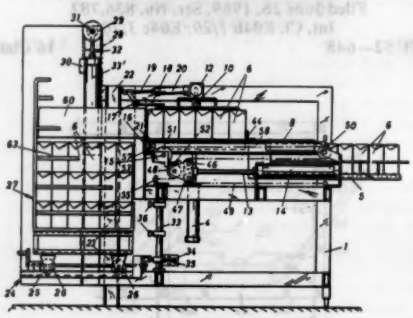
The methods and apparatus deal with wrapping thin rectangular articles in a rectangular blank and are particularly suitable for gramophone record sleeves. One feature is that side flaps are formed and folded over on the blank to form two rectangular blank portions, one of the size of the article, the other portion of the blank having side margins which are folded around the article. Another feature is that corners of a side margin of the wrapper at one or more edges of the article are tucked in, and one side margin is folded down on the edge of the article and on to the other side margin before that side margin is folded around the edge of the article.

3,594,977

PACKING MACHINE

Halvor Grasvoll, Goteborg, Sweden, assignor to Gustav Gilbert Magnusson, Vastra Frolunda and Karl Ingvar Weiner, Goteborg, Sweden, part interest to each

Filed Mar. 13, 1970, Ser. No. 19,410
Claims priority, application Sweden, Mar. 27, 1969, 4300/69
Int. Cl. B65b 5/10, 35/40
U.S. Cl. 53—162 4 Claims



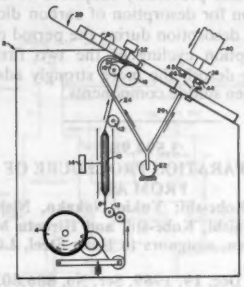
A packing machine for transferring articles such as milk cartons and similar objects from a conveyor via a conveyor plate laterally into a crate container or the like such that the cartons will be packed in the container in a uniform pattern, one layer of cartons on top of the other, without any gap forming between the adjacent cartons. The packages are fed onto the conveyor plate between a movable guide edge extending along the conveyor plate discharge edge and a guide edge mounted rigidly on the conveyor plate, and they are thereby prevented from spreading on the conveyor plate but will be positioned thereon closely adjacent each other.

3,594,978

APPARATUS FOR PACKAGING ARTICLES

Robert J. Spitznagel, Cincinnati, Ohio, assignor to Phillips Petroleum Company

Filed Oct. 27, 1969, Ser. No. 869,469
Int. Cl. B65b *9/14, 43/36*
U.S. Cl. 53—183 1 Claim



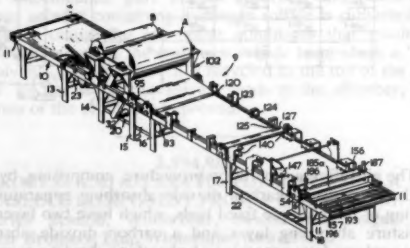
A method and apparatus for separately packaging articles within a continuous tubular film.

3,594,979

AUTOMATIC BOARD WRAPPING MACHINE

Thomas A. Branson, Burlington, Ontario, Canada; Joachim E. Huehmer, Hartford City, Ind., and Thomas A. Klasell, Cloquet, Minn., assignors to Abitibi Corporation, Birmingham, Mich.

Filed July 15, 1968, Ser. No. 745,002
Int. Cl. B65b *49/00*
U.S. Cl. 53—209 11 Claims



A machine for wrapping the finished surface only of individual panels of wallboard, plywood, decorated hardboard and the like wherein the said panels are conveyed individually through the said machine with the finished surface uppermost in aligned and spaced relationship to each other. The glued wrapping material is continuously applied to the finished surface of said panels and is folded around the side edges of the panels and impressed against the unfinished under surface. The machine includes a mechanism for cutting the web of the wrapping material between adjacent panels as the said panels are conveyed through said machine.

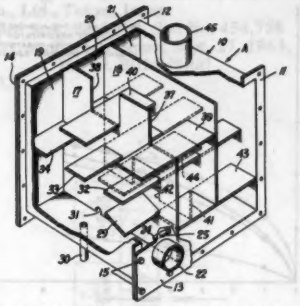
3,594,980

TREATING POLLUTED GASES IN BAFFLE CHAMBER

Charles C. Diehl, 904 Ruth St., Belmont, Calif.

Continuation-in-part of application Ser. No. 708,354, Feb. 26, 1968, now abandoned. This application Oct. 3, 1969, Ser. No. 870,430
Int. Cl. B01d *47/16*
U.S. Cl. 55—237 3 Claims

For decontaminating, and deodorizing or otherwise treating polluted gases, a stream of gases is introduced into one end and at a lower zone of a baffle chamber which is thoroughly baffled to prevent channelization of the gases therethrough. Spray means discharge a fine mist of decontaminating fluid into the stream of polluted gases closely adjacent their low point of entry into the baffle chamber and in such a direction that the fine mist of spray material is entrained in the incoming gases. As the polluted gases rise and proceed in tortuous paths through the baffle chamber the malodorous chemical elements therein are intimately exposed to the oxidation reduction reaction of the oxidizing agents in the entrained spray material causing drop out of contaminants as a new chemical so that when the gases are discharged from the baffle chamber they are thoroughly reduced to a nonodorous or acceptable odor compound.

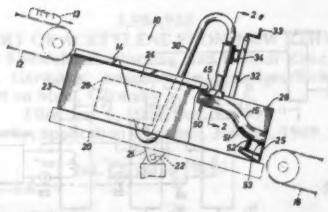


3,594,981

PACKAGING APPARATUS

Robert W. Pitts, 9710 Barberton, Houston, Tex.

Filed Sept. 23, 1968, Ser. No. 761,568
Int. Cl. B65b *43/36*
U.S. Cl. 53—386 7 Claims



Automated packaging apparatus incorporating a vacuum lift shoe adapted to be positioned in a reciprocating manner above a stack of normally closed bags removable one at a time from the stack wherein the vacuum shoe means includes a vacuum chamber which engages the uppermost surface of the stack by vacuum flow stoppage through a plurality of holes in the vacuum shoe wherein the upward reciprocation of the vacuum shoe is initiated by the vacuum flow stoppage to thereby lift the shoe only after the engagement of the shoe to the bag is completed, the bag being opened for filling with a product and, upon removal of the product and bag from the apparatus, the apparatus continues its operation with another reciprocation to open the next bag.

3,594,982

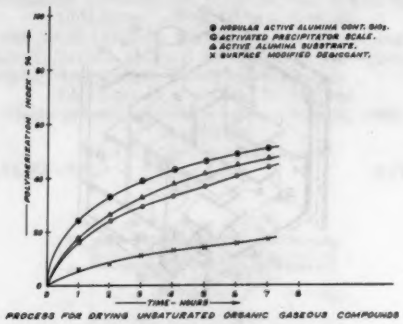
PROCESS FOR DRYING UNSATURATED ORGANIC GASEOUS COMPOUNDS

Michael J. Pearson, Pleasanton, Calif., assignor to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.

Filed Apr. 20, 1970, Ser. No. 29,894
Int. Cl. B01d *53/02*
U.S. Cl. 55—33 7 Claims

Water is removed from organic, polymerization-susceptible gaseous compounds possessing carbon-carbon unsaturation

while simultaneously inhibiting polymerization, the process comprises contacting the wet gas with an active alumina composite consisting essentially of an active alumina substrate having a substantially chi-rho and eta structure, a surface of at least 300 $m.^2/g.$, a loss on ignition from about 1.8



PROCESS FOR DRYING UNSATURATED ORGANIC GASEOUS COMPOUNDS

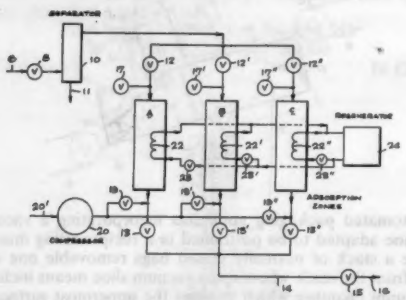
percent to about 15 percent by weight, the surface of the substrate having an alkali modified structure of the empirical formula $MA1(OH)_2CO_3$, where M is potassium or sodium, said composite contains at least about 3 percent and up to about 25 percent by weight of $MA1(OH)_2CO_3$.

3,594,983

GAS-TREATING PROCESS AND SYSTEM

James D. Yearout, Rolling Hills, Calif., assignor to Process Services Inc., Gardena, Calif.

Filed June 17, 1969, Ser. No. 834,011
Int. Cl. B01d *53/04*
U.S. Cl. 55—33 **15 Claims**



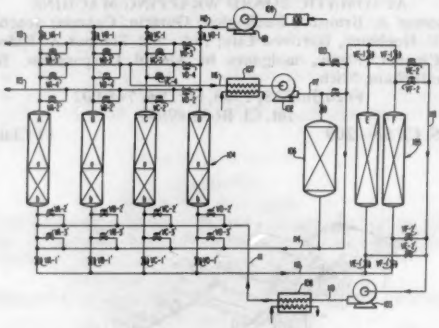
Removal of certain components from gas mixtures such as hydrocarbon mixtures, particularly the removal of carbon dioxide and small quantities of other gases such as water vapor and hydrogen sulfide, from natural gas for production of natural gas of improved heating value, by an adsorption process and system, including according to one embodiment, passing natural gas containing a minor amount of carbon dioxide, and small amounts of water vapor and hydrogen sulfide, through a synthetic zeolite or molecular sieve in three separate adsorption zones to remove the carbon dioxide, hydrogen sulfide and water vapor by adsorption in such zones, recovering a purified natural gas stream, and regenerating the adsorbent in the three adsorption zones by a combination of pressure swing regeneration and thermal swing regeneration, the pressure swing regeneration occurring in relatively short periods of time of the order of about one-half hour for two of the adsorbent zones, employing a pressurized purge gas such as nitrogen, or a vacuum, so that one of the two last mentioned zones is undergoing pressure desorption for removal of the adsorbed carbon dioxide, while the other of such two zones is on stream, such one-half hour on stream—one-half hour pressure regeneration cycles being carried out for a substantial period, and concurrently therewith, the third adsorption zone, which had been previously on stream and previously subjected to such pressure swing regeneration for desorption of carbon dioxide, is subjected to thermal desorption during the period of on stream—pressure desorption cycling of the two first mentioned zones, to thereby desorb the more strongly adsorbed water vapor and hydrogen sulfide components.

3,594,984

REFINING SEPARATION PROCEDURE OF OXYGEN FROM AIR

Akira Toyama, Kobe-shi; Yukio Nakako, Nishinomiya-shi; Sakayuki Nakanishi, Kobe-shi, and Hiroetu Miki, Akashi-shi, all of, Japan, assignors to Kobe Steel, Ltd., Kobe-shi, Japan

Filed Dec. 19, 1969, Ser. No. 886,803
Claims priority, application Japan, Dec. 20, 1968, Aug. 27, 1969, 43/94090; 44/67791
Int. Cl. B01d *53/03*
U.S. Cl. 55—33 **1 Claim**



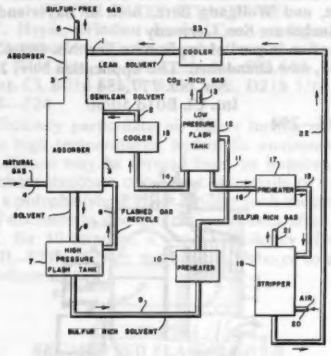
The air refining separation procedure, comprising, by using both the moisture-carbon dioxide absorbing apparatus consisting of the multiple fixed beds, which have two layers of a moisture absorbing layer and a carbon dioxide absorbing layer, where four processes of absorbing, heating regenerating, and cooling are repeated in turn, and the nitrogen absorbing apparatus consisting of the multiple fixed beds, where two processes of absorbing and regenerating are repeated in turn: (a) supplying the raw air, to obtain the refined air, into the fixed beds, which is in process of adsorption, of the said moisture-carbon dioxide absorbing apparatus; (b) subsequently supplying the refined air, to obtain the oxygen of low purity, into the fixed bed, which is in process of adsorption, of the said nitrogen absorbing apparatus; (c) supplying a part of the product oxygen of low purity into the fixed bed, which is in process of regeneration, of the said moisture-carbon dioxide absorbing apparatus, and subsequently recovering it as the product oxygen of low purity from the air refining separation apparatus; (d) supplying the rest of the oxygen of low purity into the fixed bed, which is in process of cooling, of the said moisture-carbon dioxide absorbing apparatus, where it is cooled and dehydrated, and then joining it with the low purity oxygen flow issued from the nitrogen adsorbing apparatus; and (e) supplying the nitrogen which desorbs from the fixed bed, which is in process of regeneration, of the said nitrogen adsorbing apparatus, after heating, into the fixed bed, which is in process of heating, of the said moisture-carbon dioxide absorbing apparatus, and subsequently discharging it out from the air refining separation apparatus.

3,594,985

ACID GAS REMOVAL FROM GAS MIXTURES

Jameil Ameen, and Seymour A. Furbush, both of Hopewell, Va., assignors to Allied Chemical Corporation, New York, N.Y.

Filed June 11, 1969, Ser. No. 832,368
Int. Cl. B01d *53/00*
U.S. Cl. 55—44 8 Claims



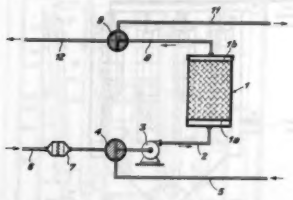
An improved solvent and process for treating and separating acid gas, particularly hydrogen sulfide from gas mixtures containing the same, such as natural gas mixtures containing hydrogen sulfide, carbon dioxide and methane. The process involves the use of a solvent comprising a mixture of dimethyl ethers of polyethylene glycols to absorb the hydrogen sulfide and part of the carbon dioxide under superatmospheric pressure. The solvent containing dissolved hydrogen sulfide and carbon dioxide is flashed at reduced pressure to remove most of the carbon dioxide and produce a "semilean" solvent. Part of the semilean solvent is recycled to an intermediate part of the absorber; the remaining semilean solvent containing hydrogen sulfide is subjected to an oxygen containing gas under conditions that result in complete removal of the hydrogen sulfide to produce a "lean" solvent. The lean solvent is recycled to the top of the absorber. By the use of two solvent feeds to the absorber, the economy of the process is improved.

3,594,986

PROCESS AND APPARATUS FOR ADSORBING A GASEOUS COMPONENT FROM A GAS MIXTURE

Emmerich Schmid, Winterthur, Switzerland, assignor to Sulzer Brothers, Ltd., Winterthur, Switzerland

Filed Apr. 1, 1970, Ser. No. 24,659
Claims priority, application Switzerland, Apr. 17, 1969, 5804
Int. Cl. B01d *53/00*
U.S. Cl. 55—68 12 Claims



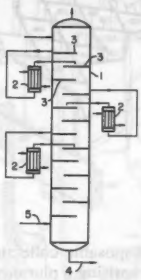
The switchover valves are actuated in a predetermined timelag sequence so that the storeroom air can first push out residual desorption gas from the container and outflow conduits before being recycled after washing to the storeroom. In the same manner, during a regeneration period, the incoming fresh air initially pushes the residual storeroom air into the storeroom before being vented to the atmosphere.

3,594,987

METHOD OF RECOVERING AMMONIA GAS FROM AQUEOUS SOLUTION CONTAINING AMMONIA AND CARBON DIOXIDE

Kenzo Oda, Higashiyodogawa-ku; Takashi Ohara, Akashi-shi; Kazuhide Sato, Kominato-machi, Naka-ku, and Takashi Mori, Minami-ku, all of, Japan, assignors to Nippon Shokubai Kagaku Kogyo Co., Ltd., Osaka, Japan and Japan Gasoline Co., Ltd., Tokyo, Japan

Filed Sept. 28, 1964, Ser. No. 454,758
Claims priority, application Japan, Sept. 27, 1963, 38/51486
Int. Cl. B01d *19/00*
U.S. Cl. 55—53 2 Claims



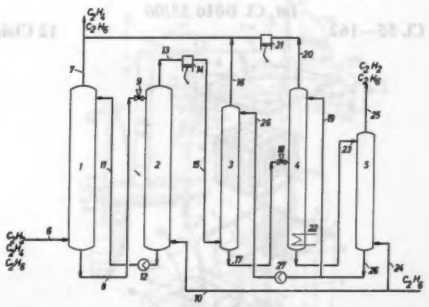
A process for recovering ammonia gas from an aqueous solution containing ammonia and carbon dioxide which comprises countercurrently contacting such aqueous solution with a desorption gas selected from air, oxygen, nitrogen and mixtures thereof. The molar ratio of ammonia to carbon dioxide in the aqueous solution is at least 2, such aqueous solution being one obtained upon the synthesis of urea from ammonia and carbon dioxide or from the production of an aromatic nitrile by the ammoxidation of an aromatic hydrocarbon.

3,594,988

RECOVERY OF ACETYLENE FROM RAW ETHYLENE

Karl-Heinz Eisenlohr, Buchschlag, and Helmut Klein, Hanau, both of, Germany, assignors to Metallgesellschaft AG, Frankfurt on Main, Germany

Filed Jan. 6, 1970, Ser. No. 992
Claims priority, application Germany, Jan. 31, 1969, P 19 04 744.0
Int. Cl. B01d *19/00*
U.S. Cl. 55—64 5 Claims



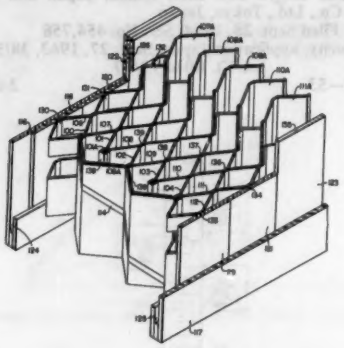
Acetylene is recovered from an ethylene-acetylene-ethane gas mixture by absorbing the acetylene therefrom, flashing and stripping the absorbate, compressing and scrubbing the gases from the stripping step with fresh solvent, and recovering the acetylene from the absorbate from the second scrubbing step.

3,594,989

COLLAPSIBLE AND DISPOSABLE COLLECTING CELL FOR ELECTROSTATIC PRECIPITATOR

Cedric R. Bastiaans, Verona, Pa.

Filed Dec. 16, 1969, Ser. No. 885,403
Int. Cl. B03c 3/45
U.S. Cl. 55—142 4 Claims



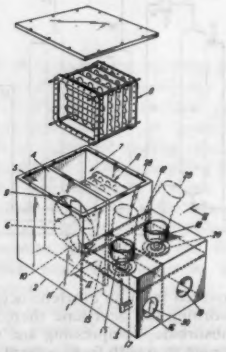
A collapsible and disposable collecting cell for an electrostatic precipitator comprising a plurality of conducting sheets of first and second overlying series adapted to be interconnected to opposite polarities of a voltage, the conducting sheets of the first series being alternately disposed between the conducting sheets of the second series. A respective insulating sheet is disposed between each conductive sheet and all sheets are interconnected in a manner to form a honeycomblike cell, when expanded, so as to receive air therethrough in one direction. An uppermost and a lowermost sheet is respectively connected to respective oppositely positioned supporting base sheets in a flexible manner such as by means of movable support bars extending along spaced connecting portions in the one direction but which are movable to permit limited movement at right angles to and in the same plane of the connecting portions to thereby allow contraction of the cell in the direction of limited movement as it is expanded in another direction perpendicular thereto. The insulating sheets between conducting sheets are longer in the connecting direction to provide an overhang at respective opposite cell ends.

3,594,990

DEHUMIDIFIERS

Edwin Lawrence Hawley, Sittingbourne, Kent, England, assignor to E. P. S. (Research & Development) Limited, Sittingbourne, Kent, England

Filed May 6, 1969, Ser. No. 822,112
Int. Cl. B01d 53/00
U.S. Cl. 55—162 12 Claims



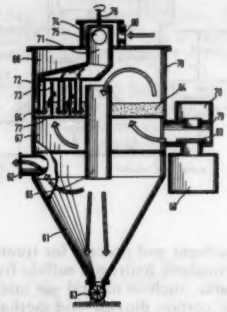
A portable dehumidifier comprising a body having a vapor inlet and outlet, means such as a fan for propelling such vapor from the inlet to the outlet; dehumidifying means including, for example, a desiccant for removing moisture from said vapor; and heating means, for example an electrical heating element, for expelling moisture retained by said dehumidifying means.

3,594,991

APPARATUS FOR SEPARATING SUSPENDED SOLID PARTICLES FROM A CARRIER GAS

Max Berz, and Wolfgang Berz, both of Bayerlandstrasse 7, 8113 Kochel am See, Germany

Continuation-in-part of application Ser. No. 491,670, Sept. 30, 1965, now abandoned. This application Nov. 20, 1968, Ser. No. 777,454
Int. Cl. B01d 50/00
U.S. Cl. 55—294 12 Claims



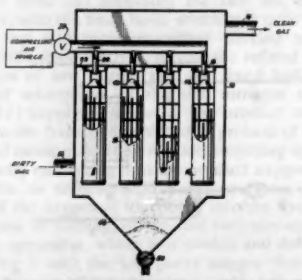
A filter chamber is superimposed on the container of a cyclone collector and vertically divided into two compartments by a filter bed of particulate material. A gas stream carrying solid particles is admitted to the cyclone collector, stripped of a portion of the solids, and passed to the upper compartment of the filter chamber by a conduit which passes the top wall of the container, the lower filter compartment, and the filter bed. Residual solid particles are removed from the gas stream passing downward through the filter bed and released from the lower compartment. A rake permits the filter bed to be stirred during regeneration by a scavenging gas passed upwardly through the filter bed.

3,594,992

CLEANING ARRANGEMENT FOR BAG FILTER

George P. Carr, and Noel D. Hazzard, both of Wellsville, N.Y., assignors to The Air Preheater Company, Inc., Wellsville, N.Y.

Filed Apr. 1, 1969, Ser. No. 812,220
Int. Cl. B01d 46/04
U.S. Cl. 55—302 2 Claims



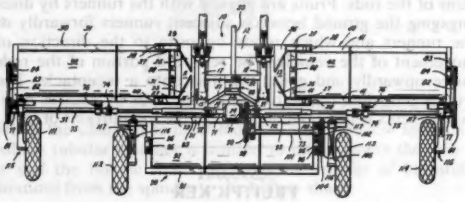
A cleaning arrangement for a bag filter whereby a jet of compressed air is directed from a nozzle into the bag filter and on to a novel deflector which divides the air into a portion that passes axially and a portion that is deflected radially. The portion passing axially thereof increases the pressure within the bag to cause the walls of the bag to flex out-

wardly and dislodge the dust cake on the outer surface thereof. The portion of the cleaning air from the nozzle that strikes the deflector is deflected radially on to walls of the filter bag also causing the flexing action which is propagated down the length of the bag to reinforce the action of the air which passes centrally therethrough.

3,594,993
POROUS, BONDED AND IMPREGNATED, NONWOVEN FILTER SHEET STRUCTURE
William T. Heyse, Windsor Locks, Conn., assignor to The Dexter Corporation, Windsor Locks, Conn.
Filed Nov. 14, 1966, Ser. No. 593,649
Int. Cl. B01d *39/20;* **B32b** *5/16;* **D21h** *5/18*
U.S. Cl. 55—524 **8 Claims**

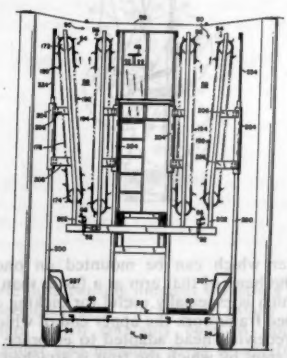
High efficiency particulate air filters having unusual resistance to high temperatures, hydrolytic environments and acidic conditions may be formed from an improved porous inorganic sheet structure comprised essentially of microglass fibers and a polyphenylene ether binder. Such sheets show no substantial decrease in strength characteristics after exposure to 300° C. for 10 minutes, a water repellency of about 30 inches (MIL–STD–282) or more and resistance to attack by even hydrofluoric acid.

3,594,994
SEGMENTED FLAIL MOWER
Anthony R. Engler, Houston, Tex., assignor to Engler Manufacturing Corporation, Houston, Tex.
Filed Apr. 23, 1969, Ser. No. 818,718
Int. Cl. A01d *75/30*
U.S. Cl. 56—7 **4 Claims**



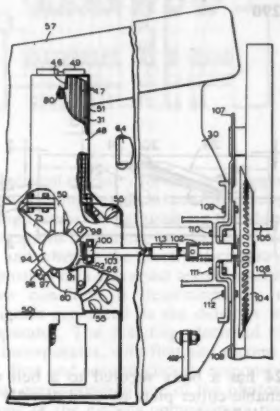
A mower, cutter or thresher device, including plural, flail-carrying drums, aligned so as to cut a uniform swath transverse of the direction of motion; means for operatively drawing the device behind a tractor and means for elevating the side wings of the device.

3,594,995
HOP-PICKING MACHINE
Charlie J. Soules, 1115 Willow, Yakima, Wash., and Thomas Lee Evans, R.1 Box 405, Yakima, Wash.
Filed June 21, 1968, Ser. No. 738,990
Int. Cl. A01d *45/30*
U.S. Cl. 56—10.7 **20 Claims**



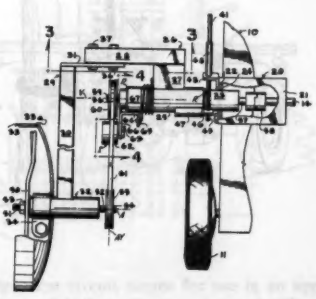
A machine for field picking hops from vines hanging from overhead supports which includes graspers for maintaining the vines in picking position as they move through the machine, picking cats for stripping the hops from the vines, a conveyor arrangement for carrying the hops away, a cutter for severing the vines to free them from the supports, and an arrangement for expelling picked vines from the machine.

3,594,996
LOW-PROFILE AND PUSH-START LAWNMOWERS AND THEIR ENGINES
John J. Horan, 420 Quigley Ave., Willow Grove, Pa.
Filed Mar. 20, 1969, Ser. No. 808,949
Int. Cl. A01d *35/26*
U.S. Cl. 56—10.2 **31 Claims**



A family of rotary lawnmowers distinguished by one or more of the following characteristics: a structural integration of the shield and engine; coolant induction via the cutting blade; extremely low profile; absence of external flywheel; push-start capability; elimination of magneto ignition; and exhaust damping via discharge under shield.

3,594,997
LAWN EDGER
William W. Tubesing, 550 Ansley, Decatur, Ga.
Filed July 3, 1969, Ser. No. 838,827
Int. Cl. A01g *3/06*
U.S. Cl. 56—17.1 **9 Claims**



A lawn edging and trimming apparatus including a drive element rotatable about a first axis, a support rotatably carrying a driven element wherein the support is rotatable about the first axis and positions the driven element along a second axis parallel to the first and selectively rotates the second axis about a third axis intersecting the first and second axes through the drive and driven elements, drive means for rotating the drive element, flexible drive means drivingly connect-

ing the drive element with the driven element, and a cutting blade carried by the driven element for rotation therewith as well as means for displacing the cutting blade laterally of the support to allow the cutting blade to extend over and behind an elevated object lying between the support means and the cutting blade.

3,594,998

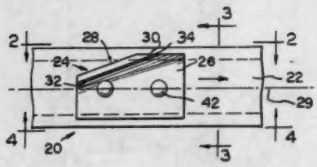
VEGETATION CUTTER ASSEMBLIES

Curt L. Graversen, and Duane M. Gibson, both of Milwaukie, Oreg., assignors to Omark Industries, Inc., Portland, Oreg.

Continuation of application Ser. No. 667,829, Sept. 14, 1967, now abandoned. This application Jan. 15, 1970, Ser. No. 4,163

Int. Cl. A01d *55/24*

U.S. Cl. 56—290 **13 Claims**



A cutter **24** has a body secured to a belt and a tilted, power-sharpenable cutter plate secured directly to the body. Cutters **54** and **74** also have keying tabs on the bodies thereof. A cutter **94** has a body secured to a belt by a thin vulcanized layer. A cutter **124** is power sharpenable and has a body embedded in a belt.

3,594,999

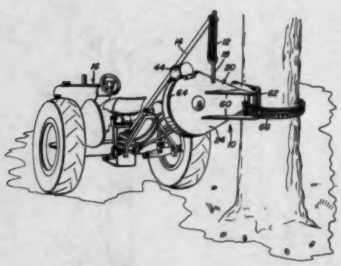
TREE SHAKER

Basil W. Savage, Route 1, Madill, Okla.

Filed Mar. 6, 1970, Ser. No. 17,083

Int. Cl. A01g *19/08*

U.S. Cl. 56—328 TS **15 Claims**



A tractor-mountable shaker for nut and fruit trees including power-driven oppositely swinging eccentric weights mounted within a casing which is in turn chain clamped directly to the trunk of a tree to be shaken. The shaker is suspended from a tractor-mounted boom and is driven from the tractor power takeoff. The tree-clamping chain is hydraulically manipulated for effecting a snug engagement of the shaker against the tree.

3,595,000

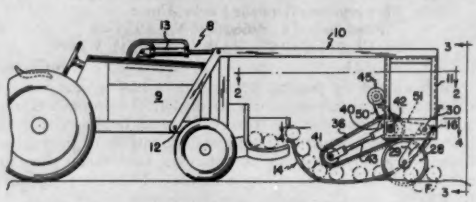
MACHINE AND METHOD FOR GATHERING FRUIT AND THE LIKE FROM THE GROUND

Kenneth H. Recker, Winter Haven, Fla., assignor to Heli-Pic, Inc., Haines City, Fla.

Continuation-in-part of application Ser. No. 717,871, Apr. 1, 1968, now abandoned. This application July 15, 1970, Ser. No. 54,905

Int. Cl. A01d *51/00*

U.S. Cl. 56—328 **8 Claims**



A fruit-gathering vehicle adapted to move over ground onto which fruit has fallen and includes a plurality of parallel runners each pivotally supported at their forward ends on a frame and curving downwardly to intermediate portions adapted to ride longitudinally on the ground, the runners each comprise a pair of parallel rods formed so that the forward portions are spaced apart to receive an individual fruit therebetween and the intermediate portions lie closer to one another so that they move between the ground and the opposite undersides of the fruit positioned by the forward positions of the rods. Fruits are aligned with the runners by discs engaging the ground between adjacent runners forwardly of the runners and which rotate opposite to the direction of movement of the vehicle. The rearward portion of the rods curve upwardly and guide the fruit onto a receptacle. The fruit is propelled rearwardly along the rods by endless moving elements which float and engage the top portions of fruit.

3,595,001

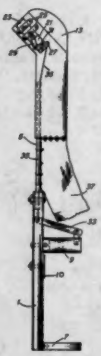
FRUITPICKER

Samuel O. Shumaker, Royal Ambassador, Apt. 1205, 3700 Galt Ocean Drive, Fort Lauderdale, Fla.

Filed Dec. 2, 1968, Ser. No. 780,386

Int. Cl. A01g *19/08*

U.S. Cl. 56—338 **9 Claims**



A fruitpicker which can be mounted on one arm and operated by the hand of that arm at a faster than customary speed, and which is especially useful for picking citrus fruit, has an Y-shaped framework the upper end of which carries a cuplike fruit-receiving head adapted to embrace a piece of fruit having a stem by which the fruit is attached to its tree. The head has a slot in which the stem is confined once the

fruit to be severed is within the head. A normally retracted, slidable cutter blade, positioned on the head to be slidable across the slot to cut through the fruit stem, is actuable by a cable running down along the framework to an operating trigger on the framework and accessible to the hand of the user. Attached to the lower end of the framework is a ring through which the user can insert the arm of that hand for mounting and steadying the picker.

3,595,002

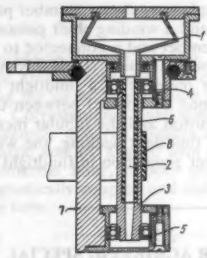
TWISTING AND FORMING DEVICE FOR TEXTILE SPINNING AND TWISTING MACHINES

Yakov Ilich Koritysskiy, Dalny pereulok, 11/13, kv. 33, and Alexandr Ivanovich Schukin, Kotelnicheskaya naberezhnaya, 25/8, kv. 71, both of, Moscow, U.S.S.R.

Filed Apr. 18, 1968, Ser. No. 722,268

Int. Cl. D01h *1/08*

U.S. Cl. 57—58.89 **3 Claims**



In a textile spinning and twisting machine the spindle supporting the chamber is mounted in a driven hollow shaft. A resilient tubular member is utilized to interconnect the spindle and the hollow shaft to obviate a transfer of harmful vibrations from the spindle to the hollow shaft.

3,595,003

FALSE TWISTING DEVICE

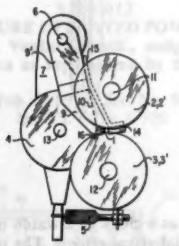
Hans Gassner, Schweinfurt, Germany, assignor to Kugelfischer Georg Schafer & Co., Schweinfurt, Germany

Filed July 23, 1969, Ser. No. 843,961

Claims priority, application Germany, Oct. 4, 1968, P 18 01 329.1

Int. Cl. D01h *7/92, 7/46*

U.S. Cl. 57—77.45 **9 Claims**



An elongate false twisting member extending axially along the outer periphery of a plurality of axially spaced-apart parallel rollers which rotatably bear in opposite radial directions against said member so as to determine a fixed radial position for same while simultaneously rotating same.

3,595,004

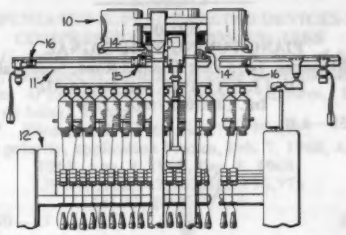
TEXTILE STRAND ENDS DOWN DETECTING APPARATUS WITH AUTOMATIC RESETTING MEANS

David W. Saunders, Fitchburg, Mass., assignor to Parks-Cramer Company, Charlotte, N.C.

Filed Oct. 14, 1969, Ser. No. 866,264

Int. Cl. D01h *13/26, 13/16, 13/32*

U.S. Cl. 57—81 **12 Claims**



Improved electrical circuitry for use in an apparatus which travels a detector along textile strand processing apparatus such as spinning frames for determining the absence of ends of yarn from locations therealong at which such ends are normally present and wherein the electrical circuitry establishes a lengthwise portion of a traversed textile machine in which an ends down condition is determined by resetting in response to signals generated as the detector travels along the textile apparatus. The resetting electrical circuitry disclosed herein incorporates, with first and second photosensitive detectors, first and second circuits responsive to signals originated from corresponding one of the photosensitive detectors, with one of the circuits comprising a resettable element and performing the function of distinguishing the absence and presence of ends of yarn at locations along a traversed textile apparatus and with the other circuit responding to signals from its corresponding photosensitive detectors by resetting the resettable element of the one circuit.

3,595,005

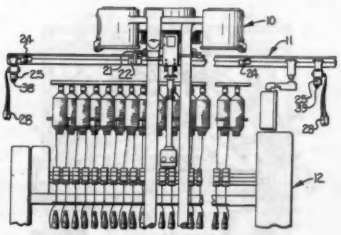
INFORMATION-TRANSMITTING MEANS FOR TEXTILE STRAND ENDS-DOWN DETECTING APPARATUS

David W. Saunders, Fitchburg, Mass., assignor to Parks-Cramer Company, Charlotte, N.C.

Filed Oct. 14, 1969, Ser. No. 866,266

Int. Cl. D01h *13/26;* **D01h** *13/16;* **D01h** *13/32*

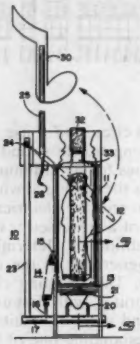
U.S. Cl. 57—81 **10 Claims**



Improved electrical circuit means for use in an apparatus which travels a detector means along textile strand processing apparatus such as spinning frames for determining the absence of ends of yarn from locations therealong at which such ends are normally present and wherein the electrical circuit means responds to a determination that ends are down by transmitting information from a moving portion of the ends down detecting apparatus to a stationary portion thereof. The information transmitting means disclosed herein incorporates a transmitter means mounted for travel with de-

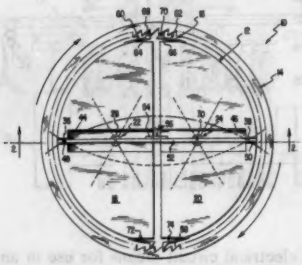
tector and logic circuit means along a predetermined path relative to a traversed textile apparatus and having an electrical lamp energized in response to a determination that ends are down on a traversed textile apparatus, and a stationary receiver means mounted relative to the path of movement of the transmitter means for exposure to the electrical lamp thereof and having a photosensitive element responsive to illumination from the lamp for variation of an electrical characteristic of the receiver.

3,595,006
PIANO TUNING TIME SIGNAL
Kirk Lightbourne, 7433 East Thomas Road, Scottsdale, Ariz.
Filed July 13, 1970, Ser. No. 54,332
Int. Cl. G04f *1/00, 11/00*
U.S. Cl. 58—1 R **4 Claims**



An interval timer for a piano comprising a liquid-holding container reciprocably mounted in a frame. A wick is inserted in the container to aid in the evaporation of the liquid. After a predetermined time the lightened container is vertically shifted causing the rotation of a signal shaft to indicate a given time lapse.

3,595,007
RESONATOR-DRIVEN TIMEPIECE
Hugh M. Baker, Jr., Washington, D.C., assignor to HB Engineering Corporation, Silver Spring, Md.
Filed Aug. 29, 1969, Ser. No. 854,215
Int. Cl. G04c *3/00*
U.S. Cl. 58—23 **6 Claims**



A resonator-driven timepiece is disclosed comprising a high Q electromechanical resonator which is capable of high excursions without Q degradation. Because of the high excursions, the gear driven by the resonator includes large teeth. The gear is preferably annular with the resonator disposed within the internal dimension of the gear. The resonator is preferably piezoelectrically driven.

3,595,008
A FLUIDTIGHT CONNECTION FOR A TIMEPIECE WINDING KNOB
Ervin Piquerez, 2854 Bassecourt, Switzerland
Filed Oct. 30, 1968, Ser. No. 771,769
Int. Cl. G04b *37/08*
U.S. Cl. 58—90 **5 Claims**

In a watertight timepiece a tubular member passes through the timepiece casing and a winding shaft passes through the tube with a tubular member and is connected to an elastically deformable winding button which is slidably mounted over an end of the tubular member in a fluidtight manner. The fluidtightness is obtained by contact between the elastically deformable winding button and the tubular member without the interposition of a fluidtight packing, the winding button having an annular inner projection in fluidtight contact with the tubular member.

3,595,009
TIMEPIECE FOR ACHIEVING SPECIAL VISUAL EFFECTS
David L. Pakter, 1192 Park Ave., New York, N.Y., and Thomas R. Krauss, 62-06 Eightieth St., Middle Village, N.Y.
Filed Mar. 30, 1970, Ser. No. 23,610
Int. Cl. G04b *19/00*
U.S. Cl. 58—126 A **5 Claims**

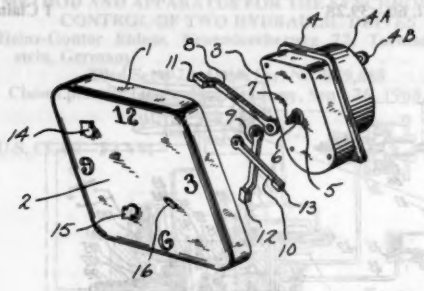
A timepiece such as a clock or a watch having the capability of providing special visual effects. The timepiece has a stationary face in front of which the hands of the timepiece are located. The conventional sweep-second hand is replaced in the timepiece by a sweep-second disc which is situated in front of the hands and which is transparent so that the hands are clearly visible therethrough. This disc and the stationary face behind the hands are provided with designs of predetermined color and pattern which coact with each other to achieve predetermined visual effects during rotary movement of the sweep-second disc.

3,595,010

ENCLOSED INDICATING DEVICE

Val Kaiser, 3413 West Wells St., Milwaukee, Wis.

Filed Apr. 9, 1969, Ser. No. 814,591
Int. Cl. G04b *19/00, 45/04*
U.S. Cl. 58—126 5 Claims



A clock including second, minute and hour arms terminated at the ends in magnets. The clock is enclosed in a housing having the outer face formed of plastic to transmit magnetic flux. Corresponding small minute, hour and second hands of a magnetic material slidably abut the exterior surface of the plastic and are aligned with the appropriate outer ends of the internal hour, minute and second arms. The hands are magnetically coupled and slide over the outer face to indicate the time.

3,595,011

METHOD OF FORMING CHAIN SIDE BARS WITH CURVED BEARING SURFACES

Firl W. Nicholson, Columbus, Ohio, and Gifford E. Rauberts, Morristown, Tenn., assignors to Jeffrey Galion Inc.

Division of Ser. No. 732,384, May 27, 1968, Pat. No. 3,518,892
Filed Aug. 12, 1969, Ser. No. 849,329
Int. Cl. F16g *13/06*
U.S. Cl. 59—8 21 Claims

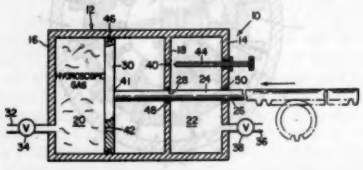
Method of forming side bars of chain links with inwardly curved bearing surfaces by mechanical deformation of the bearing surfaces, and the bearing surfaces may also be laterally expanded by the mechanical deformation.

3,595,012

SEA PRESSURE OPERATED POWER DEVICE

Earl J. Beck, Jr., Ventura, Calif., assignor to The United States of America as represented by the Secretary of the Navy

Filed Feb. 6, 1970, Ser. No. 9,240
Int. Cl. F01k *27/00*
U.S. Cl. 60—1 3 Claims



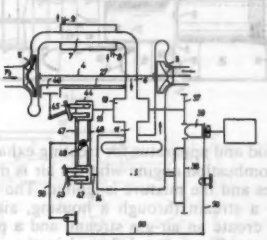
A power source for an underwater tool comprising a hollow cylinder filled with a hygroscopic gas. At sea level the gas is maintained at atmospheric pressure so that when lowered to deep ocean depths, high pressure sea water will operate a tool connected thereto and then pass into the cylinder through a small orifice. The hygroscopic gas absorbs the water and maintains a constant low back pressure in the cylinder so that the power available remains constant as the cylinder fills.

3,595,013

COMPENSATED SUPERCHARGING DEVICES FOR COMPRESSION-IGNITION ENGINES

Maurice G. Brille, and Yves M. Baguelin, both of Suresnes, France, assignors to Societe Anonyme De Vehicules Industriels et D'Equipements Mecaniques Saviem, Suresnes (Hauts de Seine), France

Filed Jan. 27, 1969, Ser. No. 794,187
Claims priority, application France, Feb. 7, 1968, Aug. 7, 1968, Aug. 8, 1968, Dec. 5, 1968, 139,048;162,147;162,320;176,778
Int. Cl. F02b *37/04*
U.S. Cl. 60—13 8 Claims



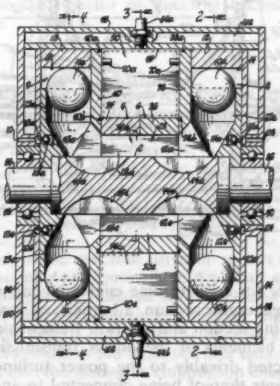
A compensated supercharging device for a compression-ignition engine cooled by a liquid at a regulated temperature and already supercharged by a turbosupercharger, said device tending to correct the known inconveniences of this type of supercharging by regulating the temperature and pressure of the air delivered by said turbosupercharger before it is introduced into the engine for all speed and load conditions of said engine.

3,595,014

ROTARY ENGINES

Harold A. McMaster, 707 Riverside Drive, Woodville, Ohio

Filed Dec. 30, 1969, Ser. No. 889,194
Int. Cl. F01b *21/00*; F01c *9/00*
U.S. Cl. 60—19 124 Claims



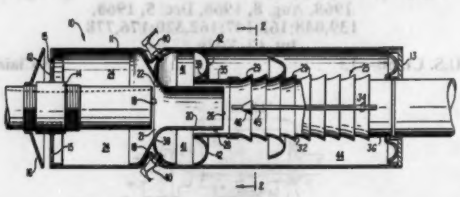
A rotary engine of the oscillating rotor or "cat-and-mouse" type including a shaft with a pair of rotors each mounted for

rotation with respect to the shaft and for oscillating rotation with respect to each other. The engine includes drive means having drive members reciprocable in response to oscillating rotation of the rotors with respect to each other, and means responsive to reciprocation of the drive members to cause rotation of the shaft.

3,595,015
EXHAUST GAS TREATMENT MEANS

Yuma K. Kretschmer, Farrar, Ga., assignor to Eugene T. Dykes; W. Barrett Howell and William B. Dykes, Atlanta, Ga.

Filed Feb. 18, 1970, Ser. No. 12,232
Int. Cl. F01n *3/10*
U.S. Cl. 60—30 **3 Claims**

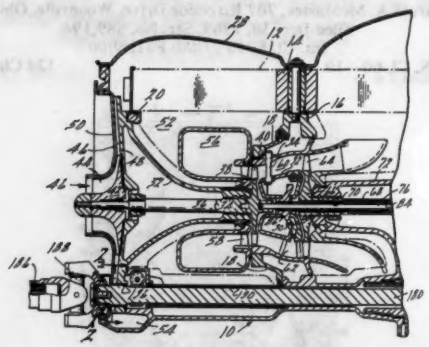


A method and apparatus for treating exhaust gases from an internal combustion engine wherein air is mixed with the exhaust gases and the mixture is ignited. The exhaust gases are flowed in a stream through a housing, air is added to the stream to create an air-gas stream, and a portion of the air-gas stream is diverted and flowed in the opposite direction within the housing in a path surrounding the air-gas stream. The diverted portion of the air-gas stream is ignited and added back into the main air-gas stream.

3,595,016
DRIVE LINE FOR A GAS TURBINE POWER PLANT

Thomas Rowe Stockton, Ann Arbor, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Feb. 2, 1970, Ser. No. 7,492
Int. Cl. F02c *3/10*
U.S. Cl. 60—39.16 **6 Claims**

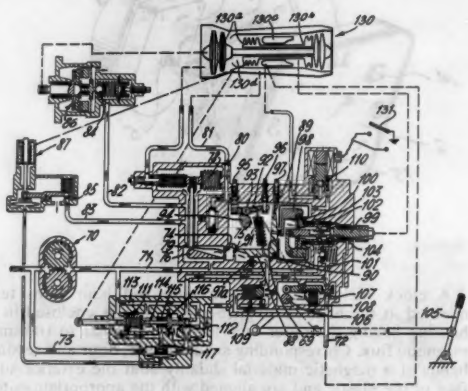


A drive line for a gas turbine engine having an integrated diffuser, a regenerator section, a burner and gasifier section, a power turbine section and a power transmission assembly, power input elements of the power transmission assembly being connected drivably to the power turbine and power output elements thereof being connected to an output shaft extending in parallel disposition with respect to the power turbine shaft and through the gas turbine diffuser housing, the diffuser blades being modified to accommodate the output shaft whereby the overall dimensions of the engine and drive line are reduced to a minimum.

3,595,017
FUEL CONTROL SYSTEMS FOR GAS TURBINE ENGINES

Joseph Lewis Bloom, Baie D'urfe, Quebec, Canada, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

Filed Mar. 11, 1969, Ser. No. 806,095
Int. Cl. F02c *9/08, 9/10*
U.S. Cl. 60—39.28 **1 Claim**

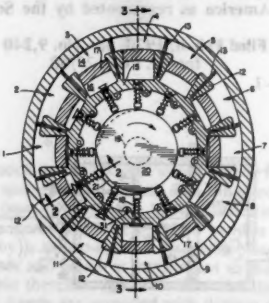


A fuel control system operates by restricting fuel flow by means of two variable restrictors in series, ad by spilling the remaining fuel via a spill valve to a return line. The first restrictor is variable by apparatus sensitive to changes of air pressure at the compressor of the engine with which the system is used. The second restrictor is variable both by a force which is a function of the desired speed of the engine and by a device which is sensitive to engine speed and which opposes the said force as engine speed increases. The spill valve is acted upon by fuel pressure upstream of the first rertrictor so as to tend to increase fuel spillage, and by a device sensitive to engine speed and by fuel pressure downstream of the second restrictor so as to tend to reduce fuel spillage. The two restrictors are aligned orifices opening into an unobstructed chamber which lies between them, the orifices being controlled by blades engaging the sides of their respective orifices remote from the chamber.

3,595,018
ROTARY ENGINE

Edward T. Saylor, Jr., 144 E. 22 St., New York, N.Y.

Continuation-in-part of application Ser. No. 687,947, Nov. 9, 1967, now Patent No. 3,485,174. This application Dec. 18, 1969, Ser. No. 886,421
Int. Cl. F02g *3/00;* **F02b** *57/10*
U.S. Cl. 60—39.61 **7 Claims**



Various configurations of rotary engines including internal combustion rotary engines are disclosed wherein pressure ex-

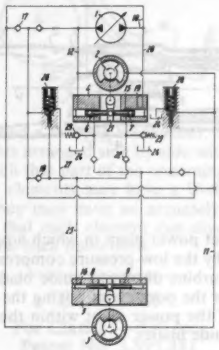
erted by the motive gas is transmitted by means of an intermediate liquid against the outer eccentric casing, thus causing relative rotary movement between the casing and a central rotor.

3,595,019

METHOD AND APPARATUS FOR THE SYNCHRONIZED CONTROL OF TWO HYDRAULIC DRIVES

Heinz-Gunter Ehluss, Neuendercherweg 72, Tornesch/Holstein, Germany

Filed Sept. 22, 1969, Ser. No. 859,888
Claims priority, application Germany, Sept. 25, 1968, P 17 76 120.5
Int. Cl. F15b *11/22*
U.S. Cl. 60—52 VM **5 Claims**



Two reversible hydraulic drives, e.g. for operating ship's stabilizing fins, are supplied by a single hydraulic feed pump.

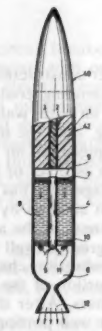
A pipeline connecting the drives is maintained at a settable pressure level, and lack of synchronism between the drives, manifested by a variation in pressure in that pipeline, is automatically corrected by a feed of pressure oil to, or a bleeding of pressure oil from, the connecting pipeline.

3,595,020

METHOD FOR PRODUCING BURNABLE GASES FOR THRUST ENGINES

Johannes Schubert, Unterhaching, and Rolf Fuchs, Poing, both of, Germany, assignors to Bolkow Gesellschaft mit beschrankter Haftung, Ottobrunn bei, Munich, Germany

Continuation of application Ser. No. 671,658, Sept. 29, 1967, now abandoned. This application Apr. 14, 1970, Ser. No. 28,201
Int. Cl. F02k *7/08, 9/02*
U.S. Cl. 60—204 **4 Claims**



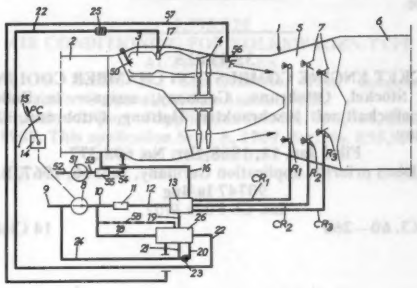
Burnable gases under pressure for operating engines such as thrust engines and particular rocket and ramjet engines are produced by arranging together two solid propellant charges, one of which comprises an auxiliary propellant charge having a high thermal efficiency and the other constituting a main propellant charge comprising a material of low heat of fusion and evaporation. The auxiliary charge is ignited by a fuse device and will burn off adjacent the main charge but shielded therefrom by a burn-off insulation. The burnable gases which are produced are directed by their own pressure through a gas duct into a combustion chamber where they are admixed with an oxidizer which may be supplied under the pressure force of the gases themselves.

3,595,021

FUEL FEED SYSTEM FOR REHEAT-COMBUSTION IN GAS TURBINE POWER PLANTS

Roger Henri Tissier, Paris, France, assignor to Societe National D'Etude Et De Construction De Moteurs D'Aviation, Paris, France

Filed Oct. 7, 1969, Ser. No. 864,306
Claims priority, application France, Oct. 10, 1968, Sept. 15, 1969, 169,476;6,931,271
Int. Cl. F02k *3/10*
U.S. Cl. 60—243 **25 Claims**



A fuel feed system for the reheat combustion chamber of a gas turbine power plant, comprising a reheat combustion fuel pump, at least one fuel injector for such reheat combustion chamber, a fuel-metering device in a feed line from said pump to said injector or injectors, a fuel bypass means connected to bypass said metering device, and a shutoff device for closing the bypass means when the pressure of fuel prevailing in the injector or injectors exceeds a predetermined value.

3,595,022

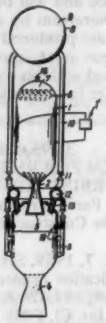
THERMODYNAMIC REACTION DRIVE

Reinhart Radebold, and Hermann Lang, both of Berlin, Germany, assignors to Licentia Patent-Verwaltungs G.m.b.H., Frankfurt am Main, Germany

Filed Apr. 9, 1969, Ser. No. 835,279
Claims priority, application Germany, Apr. 1, 1967, July 11, 1967, L 56 149;L 56 963
Int. Cl. F02k *9/02, 7/10*
U.S. Cl. 60—258 **10 Claims**

A thermodynamic reaction drive or rocket engine which employs liquefiable solid propellant. An alkali metal, which is used as the propellant, is stored in the fuel tank of the rocket engine in the solid state and then, whenever engine operation is desired, liquefied by heating to the necessary temperature. The liquid propellant is fed from the fuel tank through a De Laval nozzle into the mixing or combustion chamber where it is combined with an oxidizer. The propellant, which can be forced through the nozzle primarily by means of its own vapor pressure, is changed over at the nozzle into a two-phase flow. The oxidizer, which is simultaneously introduced into the mixing chamber at a higher pressure than the pres-

sure in the chamber, effects the combustion of the propellant so that the internal energy of the products of combustion



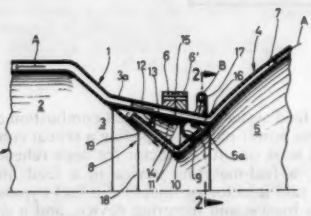
may be converted to kinetic energy in an appropriate thrust nozzle.

3,595,023

ROCKET ENGINE COMBUSTION CHAMBER COOLING

Karl Stockel, Ottobrunn, Germany, assignor to Bolkow Gesellschaft mit beschraukter, Haftung, Ottobrunn, Germany

Filed Jan. 11, 1968, Ser. No. 698,377
Claims priority, application Germany, Jan. 16, 1967, B 90747 Ia/46g
Int. Cl. F02k *9/02*
U.S. Cl. 60—260 **14 Claims**



A liquid-cooled rocket combustion chamber construction includes a thrust nozzle and is characterized by the cooling of the walls using a plurality of separate cooling circuits which are independent form each other.

In one embodiment the combustion chamber includes a first or head section which comprises the combustion chamber and a convergent wall portion of the nozzle which is joined through a flange to a second or trailing section which includes a small convergent portion and the divergent portion of the nozzle. A nozzle insert is formed as a continuation of the convergent and divergent portions. At least one first cooling circuit includes a plurality of axially extending passages defined along the length of the head section and trailing section. A second circuit for cooling includes an annular inlet which is connected at the divergent trailing end of the nozzle insert and provides means for directing a fluid in counterflow arrangement along the nozzle section wall and then for directing the cooling fluid in the form of a mist into the combustion chamber at the nozzle section.

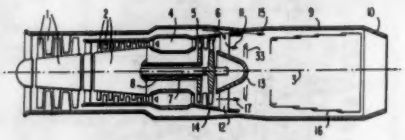
Another embodiment includes three separate and independent wall coding circuits, one fluid circuit comprising means for circulating a cooling fluid in association with the walls of the combustion chamber head section and another circuit providing means for circulating fluid in association with the trailing section, and a third fluid conduit connection for the nozzle insert.

3,595,024

DUCTED FAN-JET ENGINE

Gottfried Kohler, Friedrichshafen, and Eberhard Bader, Munich, both of, Germany, assignors to Motoren-und Turbinen-Union, GmbH, Munich, Germany

Filed May 8, 1969, Ser. No. 822,968
Claims priority, application Austria, May 8, 1968, A4425/68
Int. Cl. F02k *3/08*
U.S. Cl. 60—261 **5 Claims**



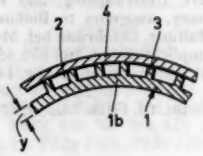
A ducted fan-jet power plant in which a part of the bypass airflow supplied by the low-pressure compressor is conducted through hollow turbine discharge guide blades, open at their trailing edges, for the purpose of mixing the bypass flow and the main flow of the power plant within the area of the turbine discharge guide blades.

3,595,025

ROCKET ENGINE COMBUSTION CHAMBER

Karl Stockel, Ottobrunn; Carl-Helmut Dederra, Ottobrunn; Kuno Dreyer, Munchen; Just Sohlemann, Ottobrunn, and Michael Kaufman, Neubiberg, all of, Germany, assignors to Messerschmitt-Bolkow Gesellschaft mit beschrankter Haftung, Munich, Germany

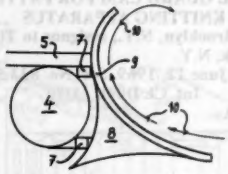
Filed July 9, 1969, Ser. No. 840,373
Claims priority, application Germany, July 11, 1968, P 17 51 691.5
Int. Cl. F02k *11/02;* **C23b** *7/00;* **B23p** *15/26*
U.S. Cl. 60—267 **11 Claims**



A combustion chamber construction includes an inner wall having longitudinally extending cooling channels defined in the exterior thereof and an outer wall which is bonded to the inner wall by galvanizing, both the inner wall and outer wall are made of a single piece of an oxygen-free copper or equivalent material such as silver or molybdenum. The cooling channels are advantageously cut in accordance with the method of the invention such as by machining and formed with the least wall thickness in the area of the thrust nozzle and with the relatively greatest wall thickness in the area of the discharge of the combustion chamber. The internal wall thickness at the head portion of the combustion chamber is made of medium thickness. After the cooling channels are machined into the inner wall portion the channels are filled with a filler material which is electrically conductive and has a low melting point so that upon galvanizing it is melted out. In some instances an intermediate layer is positioned between an outer relatively thick and strong layer and inner

wall of the combustion chamber, and the three layers are galvanized together.

3,595,026
BREAKWATER
Richard Scholl, Hergiswil, Switzerland, assignor to Resa AG., Hergiswill, Switzerland
Filed Apr. 4, 1969, Ser. No. 813,480
Claims priority, application Switzerland, Apr. 5, 1968, 5204/68
Int. Cl. E02b 3/06
U.S. Cl. 61—5 7 Claims

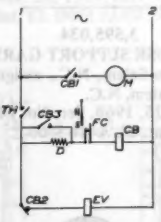


There is disclosed a floating breakwater. Such breakwater may have elements arranged side by side with a lateral space between them such that part of the oncoming waves can pass in between. The elements may have a U-shaped horizontal cross section. They may have an arcuately curved vertical cross section so that each element can divert an oncoming wave upwardly and back upon itself.

ERRATUM

For Class 61—920 see:
Patent No. 3,595,351

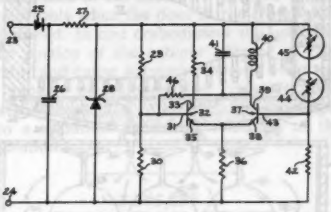
3,595,027
STARTING CIRCUIT FOR ELECTRIC MOTOR
Andrew George Heron, Stocksfield, England, assignor to Heron Electrical Devices Limited
Filed July 9, 1969, Ser. No. 840,309
Claims priority, application Great Britain, Aug. 15, 1968, 38992/68
Int. Cl. F25b 41/00
U.S. Cl. 62—158 3 Claims



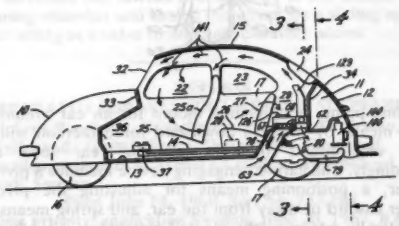
A circuit including a circuit breaker for starting an electric motor driving a fluid pump with output and return pipes, comprising an initiating electric contact, a short circuit pipe connected between said output and return pipes, an electromagnetic valve in said short circuit pipe adapted to open on operation of said initiating contact and close when said motor has started, and a fluid-operated contact in series with said circuit breaker such that said breaker cannot close until the flow past said flow-operated contact is reduced to a predetermined value.

3,595,028
CONTROL MEANS FOR AIR-CONDITIONING SYSTEM
Paul D. Schrader, Louisville, Ky., assignor to General Electric Company
Filed Oct. 2, 1969, Ser. No. 863,218
Int. Cl. F25d 17/04
U.S. Cl. 62—176 6 Claims

In an air conditioner there is provided a thermistor to sense the dry bulb temperature of the air entering the evaporator coil and another thermistor to sense the dry bulb temperature of the air leaving the evaporator coil. The thermistors are electrically connected into a control circuit so that the air conditioner is controlled by the combined resistance of the two thermistors. The air conditioner is thus controlled in response to both the temperature and the humidity of the air being cooled.



3,595,029
AIR CONDITIONING FOR VOLKSWAGEN-TYPE AUTOMOBILES
Henry W. Lende, Jr., San Antonio, Tex., assignor to Heatransfer Corporation, San Antonio, Tex.
Continuation-in-part of application Ser. No. 794,714, Jan. 28, 1969. This application Sept. 8, 1969, Ser. No. 855,989
Int. Cl. B60h 3/04
U.S. Cl. 62—244 3 Claims

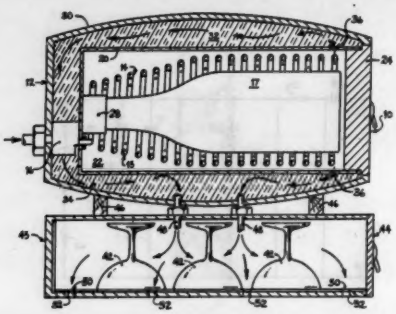


Air-conditioning apparatus particularly adapted for small cars of the Volkswagen type and comprising an encased condenser and evaporator forming a reversible heat exchange unit of the heat pump type which may be conveniently stowed in the space behind the rear seat and which directs heated or cooled air forwardly along the interior roofline, then reversely through the passenger space. The limited space beneath the dashboard, therefore, is unencumbered by the evaporator and control units as heretofore and air circulation is improved, while installation is facilitated.

3,595,030
DEVICE FOR COOLING BOTTLED LIQUIDS
Donald J. Roslonski, 8030 U.S. Hyw. 130, Pennsauken, N.J.
Filed Aug. 12, 1969, Ser. No. 849,314
Int. Cl. F25d 11/02
U.S. Cl. 62—441 5 Claims

A portable device for cooling bottled liquids, such as wine, including a thermally insulated container and a coil of tubing positioned therein within which a liquid-containing bottle is adapted to be placed. The surface of the tubing facing in-

wardly of the coil has a plurality of perforations therein so that a gaseous refrigerant introduced into the tubing will flow



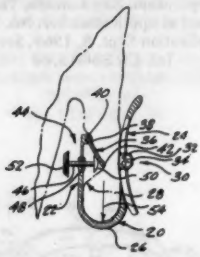
out of the perforations and radially inwardly of the coil against a bottle disposed within the coil.

3,595,031

EARRING CLAMP HAVING ADJUSTABLY POSITIONABLE PIVOTED MEMBER WITH RETRACTING MEANS

Emory L. Weimer, Box 57, Orondo, Wash.

Filed Oct. 7, 1968, Ser. No. 765,578
Int. Cl. A44c 7/00
U.S. Cl. 63—14 D 8 Claims



A nonslipping, nonpinching mount for an ear ornament, having means by which a downward force thereon will increase engagement thereof with the ear lobe correspondingly. The earlobe-engaging device includes a pivoted member, a positioning means for adjusting the pivoted member toward or away from the ear, and spring means for automatically retracting the pivoted member as it is adjusted away from the earlobe.

3,595,032

CYLINDER AND DIAL CIRCULAR KNITTING MACHINE WITH CAM-ACTUATED STITCH HELPERS

Donald W. Reagan, Hialeah, and Lester Mishcon, Miami Beach, both of, Fla., assignors to The Singer Company, New York, N.Y.

Filed Apr. 6, 1970, Ser. No. 25,705
Int. Cl. D04b 9/06
U.S. Cl. 66—20 9 Claims

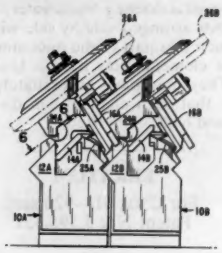
Stitch helpers mounted in the dial of a cylinder and dial circular knitting machine are moved without the aid of springs or pivoted connections into and out of positions of engagement with the fabric produced on the machine, movement of the stitch helpers being so guided that they are disposed to move the fabric downwardly into positions against the edge of the dial and to hold the fabric in such positions while dial needles are pushed to latch clear positions, the stitch helpers being caused to release the fabric and assume retracted positions before the needles cast off.

3,595,033

RETRACTABLE GUARD CAM FOR PATTERN WHEEL KNITTING APPARATUS

Harry Agulnek, Brooklyn, N.Y., assignor to The Singer Company, New York, N.Y.

Filed June 12, 1969, Ser. No. 832,564
Int. Cl. D04b 15/76
U.S. Cl. 66—50 A 5 Claims



A retractable guard cam is provided at each of the pattern wheel feed stations of a circular knitting machine. Such retractable guard cam, which prevents the uncontrolled flight of needles from a raise cam, is located on the radially inward side of each cam section block including a pattern wheel, but can be retracted from the radially outward side of the block to a position permitting needles to be raised without interference from the cam.

3,595,034

PANTY HOSE SUPPORT GARMENT

Sam C. Safrit, Winston-Salem, N.C., assignor to Hanes Corporation, Winston-Salem, N.C.

Filed July 25, 1968, Ser. No. 747,655
Int. Cl. A41b 9/00
U.S. Cl. 66—177 1 Claim

Knitted panty hose having a midriff encircling support portion comprising elastic fabric.

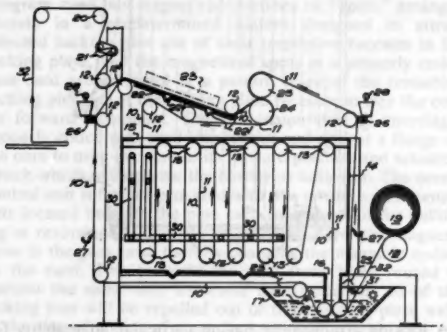
In recent years, knitted ladies' panty hose have achieved wide popular appeal.

3,595,035

METHOD AND APPARATUS FOR THE TREATMENT OF SHEET MATERIAL

Francis Elric Stringer, Marple, England, assignor to Leemetals Limited, Macclesfield, England

Filed Nov. 4, 1968, Ser. No. 773,201
Claims priority, application Great Britain, Nov. 11, 1967, 51397/67
Int. Cl. B05c 1/14, 3/136, 3/138
U.S. Cl. 68—5 5 Claims



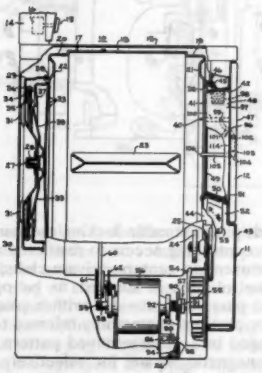
A method for the continuous treatment of fabrics in which the fabric passes between two moving bands to one or both is applied a bleaching or other chemical preparations the bands with the fabric sandwiched therebetween traversing a heated treatment chamber or kier with means for controlling the temperature of the treatment zone and the concentration of the chemical preparations, the fabric after treatment being rinsed and wound into a roll. Apparatus is also provided for carrying out the method.

3,595,036

DISPENSER FOR TREATING CHEMICAL

Laddie A. DePas, Louisville, Ky., assignor to General Electric Company

Filed Nov. 24, 1969, Ser. No. 879,033
Int. Cl. D06f 33/02, 39/02
U.S. Cl. 68—12 5 Claims



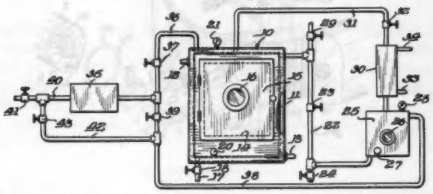
In an automatic fabric drying machine including an enclosure rotatable about a nonvertical axis to impart a tumbling action to the fabrics, air heating and circulating means adapted to heat and circulate a stream of air through the enclosure, means adapted to selectively energize and deenergize the air heating and circulating means, an outer protective cabinet having an opening therethrough into the enclosure, and a door pivotally mounted on the cabinet to close the opening; a dispenser is provided for slowly introducing water and treating chemical into the enclosure. The dispenser comprises a valve controlled reservoir tank carried by the door and including a valve operator. An actuating means incorporated in the cabinet is adapted to actuate the valve operator only when the door is in a closed position adjacent the cabinet. In one embodiment the actuating means comprises a portion of the cabinet adapted to contact the valve operator and cause actuation thereof when the door is closed. In another embodiment the actuating means comprises an actuator adapted to contact the valve operator in response to a condition indicating initiation of the fabric treating operation.

3,595,037

CLOSED CLEANSING SYSTEM

Joseph Pompei, 1420 South Ridgeland Ave., Berwyn, Ill.

Filed June 14, 1968, Ser. No. 774,601
Int. Cl. D06f 43/08
U.S. Cl. 68—18 7 Claims



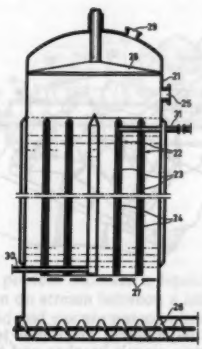
A closed cleansing system for degreasing purposes. The cleaning chamber is also used as a solvent still, and the solvent is circulated through the system in a closed circuit to achieve improved results. Disposal of oil and dirt from the system may be accomplished by means of removable absorbent granules and pads or by a drain system. In one form of the invention the solvent is condensed in the bottom of the cleaning chamber and sealed therefrom by a sliding aperture plate acting as a valve to facilitate chamber access.

3,595,038

APPARATUS FOR WASHING FIBROUS SUSPENSIONS

Carl Arne Bergholm, Nynashamn; Per-Erik Andersson, Sundsvall, and Gustaf Rune Hellerqvist, Sundsvall, all of, Sweden, assignors to Svenska Cellulosa Aktiebolaget, Sundsvall, Sweden

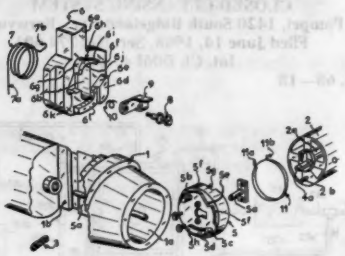
Filed June 14, 1968, Ser. No. 737,161
Claims priority, application Sweden, June 20, 1967, 8,680/67
Int. Cl. D21c 9/04
U.S. Cl. 68—181 6 Claims



In washing paper pulp or similar fibrous suspension the suspension is moved intermittently vertically through a

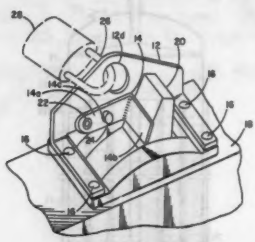
column. In the dwell periods, washing liquid is forced through the fibrous suspension, and the resulting "extract" removed, in a generally horizontal direction through perforate screening members forming portions of the column.

3,595,039
SAFETY MECHANISM FOR ANTITHEFT ARRANGEMENTS APPLICABLE TO AUTOMOBILES
Lucien Charles Hippolyte Juy, 75, Rue General Fauconnet Dijon, Cote D'Or, France
Filed May 12, 1969, Ser. No. 823,882
Claims priority, application France, May 21, 1968, Sept. 30, 1968, 117;192
Int. Cl. B60r *25/02*; E05b *65/12*
U.S. Cl. 70—252 **15 Claims**



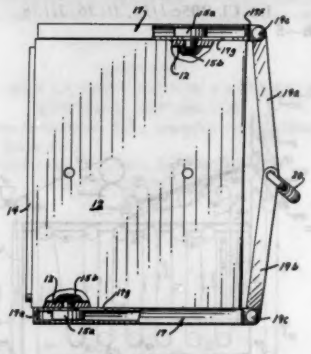
A safety locking mechanism for automobiles wherein the key turning with the lock rotor controls the switch of the vehicle circuitry through a rod coaxially carried by the rotor. The latter releases the bolt of actual locking means for a predetermined angular setting of the key which releases a yielding stop and allows thereby a spring to urge the bolt into its locking position. Another spring urges the rotor back into its normal position for which the engine is operative as soon as the starter has been actuated for a further position of the key. Repeated actuation of the starter is also prevented by an auxiliary contrivance.

3,595,040
HANDLE LOCK ATTACHMENT
Roger D. Curl, Cedar Rapids, Iowa, assignor to Square D Company, Park Ridge, Ill.
Filed Aug. 1, 1969, Ser. No. 857,262
Int. Cl. H01h *27/00*; G05g *5/00*
U.S. Cl. 70—203 **5 Claims**



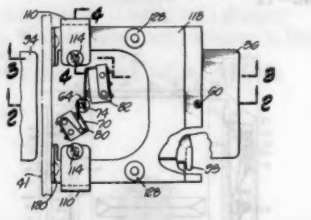
A handle lock attachment securable to the casing of a molded-case electric circuit breaker and having a pivotable handle locking member securable either by a screw or a padlock in interfering relationship with operation of the handle of the circuit breaker.

3,595,041
LOCKING ARRANGEMENT
John E. Leeper, 211 East Columbia St., Evansville, Ind.
Filed Nov. 20, 1969, Ser. No. 878,267
Int. Cl. E05b *73/00*; F16b *41/00*
U.S. Cl. 70—232 **4 Claims**



A locking arrangement having particular adaptability for use in preventing the theft of communication equipment from a vehicle characterized by hollow side members having keyway portions for selectively receiving and covering the bolts normally used to secure the communication equipment to a mounting bracket, and arms on each hollow side member pivotal to a locking position and maintained in such position by a conventional lock. In an alternative invention embodiment, a chain and lock, in tension, maintain the aforesaid hollow side members in an antitheft position.

3,595,042
LOCKING MECHANISM
Bruce S. Sedley, Glendale, Calif., assignor to H. O. Boehme, Inc., Chatsworth, Calif.
Filed Aug. 25, 1969, Ser. No. 862,590
Int. Cl. E05b *47/00*
U.S. Cl. 70—276 **19 Claims**



An improved, programmable locking mechanism, particularly useful for controlling access to restricted areas, such as parking lots, convention centers, private clubs, and the like. The access control unit is adapted to be operated by a properly coded pass card provided with a plurality of magnetized areas or portions (commonly referred to as magnetic "spots") arranged in a predetermined pattern. The unit includes electromagnetic means for selectively nullifying or changing the polarity of the magnetic spots to validate or invalidate the pass card. The unit further comprises a locking pin core adapted to be moved by a properly coded pass card to a forward position wherein it will actuate a suitable switch to operate a barrier (e.g., parking lot gate, door, turnstile, etc.) or an indicator. The core is slidable between a fixed upper plate and a fixed lower plate, and is provided with a plurality of locking pin channels extending vertically through the thickness thereof. The lower plate functions as a locking

plate. It is provided with a plurality of wells or recesses which are in substantial alignment with the locking pin channels in the core when the core is in its rearward (locked) position. A plurality of magnetic locking pins are slideably mounted in the core channels and normally extend into the locking plate wells to normally inhibit relative movement between the core and locking plate. A program card receiving slot or pocket is provided adjacent the upper surface of the core, between the fixed upper plate and a top plate, for receiving a program card; and a pass card receiving slot is provided adjacent the lower surface of the core between the locking plate and a bottom plate, for receiving a properly coded pass card. The program card has magnetized portions or "spots" arranged therein in a predetermined pattern designed to attract selected locking pins out of their respective recesses in the locking plate, and the magnetized spots in a properly coded pass card are arranged in a pattern to repel the remaining locking pins out of the locking plate recesses to free the core for forward movement. The unit is operated by inserting a properly coded pass card into its slot and against a flange on the core to urge the core to its forward position and actuate a switch which will operate the barrier or indicator. The access control unit is further provided with one or more electromagnets located beneath the pass card receiving slot for nullifying or reversing the polarity of one or more of the magnetic spots in the pass card, thereby changing the magnetic coding on the card. This prevents the card from being reused to operate the same unit a second time since not all of the locking pins will be repelled out of their locking plate wells by the altered coding of magnetic spots on the card.

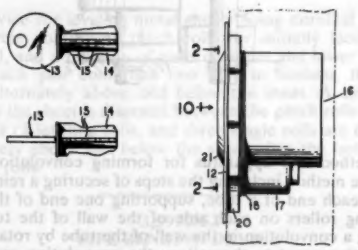
The pass card may be "revalidated" (recoded to restore the original magnetic code on the card) by inserting the card into another access control unit. This second unit is programmed to receive the altered pass card and nullify or reverse the polarities of some of the magnetic spots therein to restore the original magnetic code on the card. The second unit may, for example, be located at the exit from the restricted area and programmed to be operated by the altered pass card to actuate a barrier control switch.

3,595,043

KEYLOCK MECHANISM

Daniel A. Williams, 5516 Dump Ave., Los Angeles, Calif.

Filed Feb. 10, 1969, Ser. No. 797,863
Int. Cl. E05b *25/00*
U.S. Cl. 70—383 **11 Claims**



A keylock mechanism is disclosed herein having a housing holding an outer cylinder and rotatably supporting a middle cylinder which, in turn, supports an inner cylinder rotatably mounted on a plug of a ratchet mechanism, all of which are in coaxial relationship. A plurality of tumbler chambers are formed in the outer cylinder resiliently holding a portion of a plurality of pins of varying lengths adapted to be combined to lock or release the cylinders and plug. The middle cylinder, inner cylinder and the plug are formed with openings adapted to be selectively aligned with selected ones of the chambers so as to slidably receive the set of combined pins carried in said selected chamber. A ratchet mechanism connected between the inner cylinder and the plug permits the openings therein and in the middle and inner cylinders to be selectively aligned with chamber openings in the outer cylinder so that a multiplicity of pin tumbler combinations can be chosen. An engineer's key is employed to rotate or set the middle and inner cylinders and their associated openings with respect to the outer cylinder chambers to change combinations and a guest or operative key is employed to actuate the pin tumblers in each of the selected chambers so as to rotate the inner cylinder and the plug to release the lock.

3,595,044

EMERGENCY RELEASE FOR LOCKED DOORS

Hjalmar L. Hicks, 4031 Royer Road, Toledo, Ohio

Filed Apr. 29, 1970, Ser. No. 33,005
Int. Cl. E05b *63/00*; E05c *19/08*
U.S. Cl. 70—465 **6 Claims**

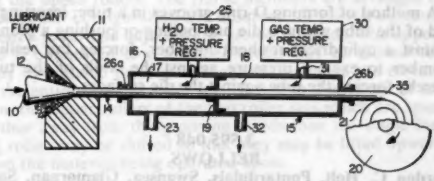
An emergency release for locked doors incorporating a glass covered device for enabling the door to be opened. The glass closure is first broken affording access to a device, which is manually operated to release the door. The ordinary keylock, such as a padlock, which secures the door may remain in locked condition, and still the door is opened. In the event of an emergency, such as a fire, access to the interior of the house, stall, or the like can be quickly gained without the necessity of a key ordinarily required for the purpose.

3,595,045

WIRE CLEANING MEANS AND METHOD

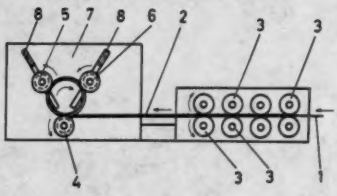
Billy F. Fuqua, Owensboro, Ky., assignor to Kentucky Electronics, Inc., Owensboro, Ky.

Filed Sept. 5, 1968, Ser. No. 757,655
Int. Cl. B21c *43/00*, *1/00*
U.S. Cl. 72—39 **6 Claims**



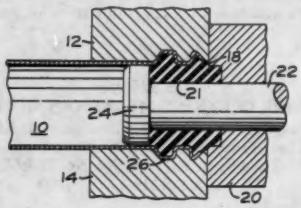
A wire drawing process includes a liquid cleaner station and gas drier station on stream between a lubricating die and spooling reel. Liquid and gas are passed upstream in a tubing to a common outlet, and serve to cool and temper the wire by relative temperatures of the wire at the die, the liquid and the air stations. Concentric pipes with the inner one perforated and enveloping the wire are provided with a barrier between contiguous liquid and gas stations.

3,595,046
METHOD AND DEVICE FOR MANUFACTURING HELICALLY SEAMED TUBE
Eino Kalervo Maikki, Etel Hesperiankatu 18 A, and Valentin Silde, 3 linja 23 B, both of Helsinki, Finland
Filed Dec. 18, 1967, Ser. No. 691,642
Claims priority, application Finland, Dec. 21, 1966, 3404/66
Int. Cl. B21c 37/12
U.S. Cl. 72—49 1 Claim



A helically seamed tube is produced from a strip-shaped profiled blank by turning the profiled blank by a revolving rolling device to the extent of one lead of the helical seam and bringing the profiled blanks which will form the seam into seaming contact with each other. At least three rolling devices are in contact with the helical seam and finish the seam while supporting the tube.

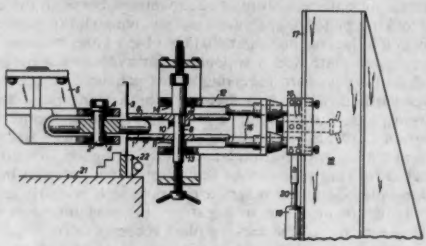
3,595,047
METHOD OF FORMING O-RING GROOVES
William K. Fanning, Morton, and Vincent R. Hodel, Roanoke, both of, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.
Filed Feb. 19, 1969, Ser. No. 800,575
Int. Cl. B21d 13/06
U.S. Cl. 72—58 5 Claims



A method of forming O-ring grooves in a tube; inserting an end of the tube within a die and pulling or pushing a plunger against a cylindrical resilient member, forcing the resilient member to exert a pressure against the walls of the tube, thereby forcing the tube against the die surfaces.

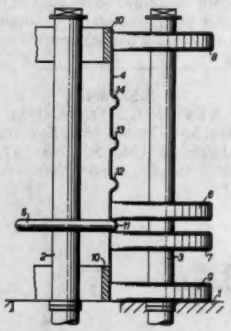
3,595,048
BELLOWS
Gordon C. Holt, Pontardulais, Swansea, Glamorgan, South Wales, assignor to Teddington Bellows Limited, Pontardulais, Swansea, Glamorgan, South Wales
Filed Jan. 30, 1969, Ser. No. 795,166
Int. Cl. B21d 17/04
U.S. Cl. 72—84 12 Claims

A method and apparatus for forming convolutions in a tube, the method including the steps of arranging a single roller to bear against one wall of the tube and pair of rollers to bear against the other wall of the tube, rotating the tube, moving the axes of the single roller and pair of rollers towards each other and simultaneously moving two of the rollers towards each other and simultaneously moving two of the rollers along their axis or axes towards the third roller



whereby a convolution is formed in one operation in the wall of the tube as said tube is rotated.

3,595,049
BELLOWS
Gordon C. Holt, Swansea, Glamorgan, South Wales, assignor to Teddington Bellows Limited, Pontardulais, Swansea, Glamorgan, South Wales
Filed Jan. 30, 1969, Ser. No. 795,149
Int. Cl. B21d 17/04
U.S. Cl. 72—110 13 Claims

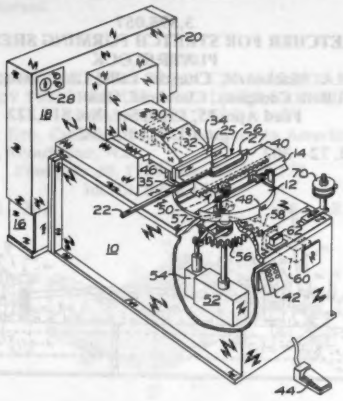


A method and apparatus for forming convolutions in a tube, the method including the steps of securing a reinforcing ring to each end of a tube, supporting one end of the tube, arranging rollers on each side of the wall of the tube and forming a convolution in the wall of the tube by rotating the tube with respect to the rollers; the convolution so formed extending radially outwardly with respect to the remainder of the tube wall.

3,595,050
COIL WINDING MACHINE
John A. McDonald, Morton; James B. Scotti, Pekin; Teddy R. Young, East Peoria, and Roland K. Bass, Chillicothe, all of, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.
Filed Apr. 1, 1969, Ser. No. 811,750
Int. Cl. B21f 3/04; B02c 19/00
U.S. Cl. 72—142 12 Claims

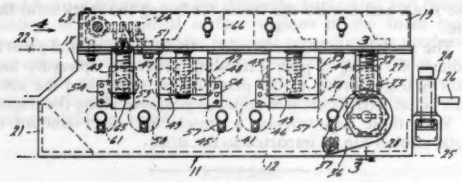
A coil winding machine for forming edge-wound or flat-on-flat coils, featuring an indexable and rotatable die, against which the material from which the coil is to be formed is held under pressure by a wiper bar. Edge-wound coils are acted upon by a wiper bar having a surface formed thereon which serves to motivate the coil turns upwardly as they are formed

so as to make room for the incoming material. The flat-on-flat coils are acted upon by a powered roller wiper bar which



is actuated so as to press the material against the die, and particularly about the ends thereof as the die is rotated.

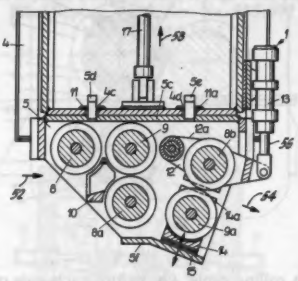
3,595,051
LEVELING DEVICE
Glenn R. Bunnell, Dearborn, Mich., assignor to Special Engineering Service, Inc., Dearborn, Mich.
Filed May 15, 1969, Ser. No. 825,016
Int. Cl. B21d *1/02*
U.S. Cl. 72—164 **5 Claims**



A device for leveling metal sheets being enrolled and fed to a press comprising pinch rolls for initially feeding the material, and a plurality of pairs of upper and lower leveling rolls. Each pair comprises two rolls in tandem, the pairs being alternately above and below the sheet. A single roll beneath the sheet is disposed between the pinch rolls and the first pair of leveling rolls, and three single rolls are disposed alternately above and below the sheet after the last pair of leveling rolls.

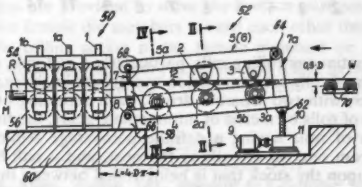
3,595,052
PIPE BENDING DEVICE
Gerhard Steck, Rheinhausen, and Hans-Dieter Weitermann, Duisburg, both of, Germany, assignors to Demag Aktiengesellschaft, Duisburg, Germany
Filed Dec. 9, 1968, Ser. No. 782,282
Int. Cl. B21d *5/14, 9/10*
U.S. Cl. 72—171 **13 Claims**

A device for the continuous prebending, particularly of hot-rolled pipes which are adapted to be wound on a separate reel after the prebending includes a magazine or removable block mounting a plurality of rollers for the bending operation. The magazine includes guide bars or supporting flanges which interengage with receiving structures on a drive frame containing the motor drive and speed gearing. The motor drive includes telescopic shaft elements which may be oriented in alignment with the corresponding shaft elements of the rollers and coupled thereto after the magazine is fitted to the frame. The rollers comprise calibrated bending and calibrating rollers, the latter being mounted on the magazine frame in a manner permitting adjustment of at least one of them. The pipe to be bent is advantageously fed through a hopper, or guide, and between opposed calibrated bending rollers and thereafter between



pure calibrating rollers. The last group of rollers, namely the calibrating rollers are mounted in the magazine frame so that they can be moved through a wide range.

3,595,053
ROLLING MILL SYSTEM
Willi Oppermann, Duisburg, Germany, assignor to Demag Aktiengesellschaft, Duisburg, Germany
Filed Mar. 26, 1969, Ser. No. 810,683
Claims priority, application Germany, June 14, 1968, P 17 52 560.9
Int. Cl. B21d *5/08*
U.S. Cl. 72—181 **11 Claims**

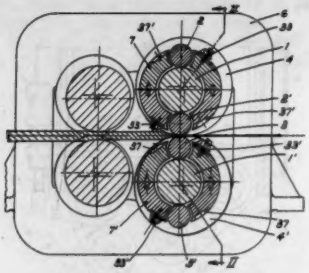


A rolling mill includes an arrangement of a plurality of grooving rollers or rolls in a row with forming rollers which are carried in a mounting frame for operation on a continuously fed strip or plate to bend the plate into a tubular configuration which is fed as formed into association with the rolls of the grooving stands. A feature of the construction is that a single forming roller and two sets of upper and lower forming rollers are arranged on a frame which includes a pivotally mounted lower frame member carrying the lower rollers and a pivotally mounted upper frame member carrying the upper rollers. The frame members are arranged in a rectangular configuration and mounted for pivotal movement about a lower end adjacent the grooving stands. The opposite end is connected to a member which may be moved vertically by suitable driving mechanism to change the elevation of the entire forming roller sets carried in the frame. In addition, the upper rollers of the two roller sets which are spaced further away from the grooving stands than the single forming roller may be shifted so that they may be lifted upwardly from the material being operated upon.

3,595,054
DOUBLE THREE HIGH PLANETARY MILL
Tadeusz Sendzimir, c/o T. Sendzimir, Inc. P.O. Box 1350, Waterbury, Conn.
Filed May 1, 1969, Ser. No. 820,719
Int. Cl. B21b *21/00*
U.S. Cl. 72—190 **14 Claims**

A planetary rolling mill with nonoverlapping rolling cycles, i.e. a pair of work rolls leaves contact with the strip before a succeeding pair of work rolls engages the strip, wherein tor-

sional vibrations of the drive elements are minimized, in that torque stresses on the drive elements are relieved before the



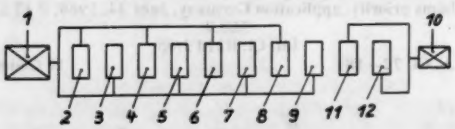
end of each rolling cycle, i.e. before each pair of work rolls leaves contact with the strip.

3,595,055

CONTINUOUS ROLLING-MILL TRAIN, PARTICULARLY A ROD MILL

Hans-Heinrich Rohde, Hosel, Germany

Filed Feb. 4, 1969, Ser. No. 796,323
Int. Cl. B21b *1/16*
U.S. Cl. 72—226 **2 Claims**



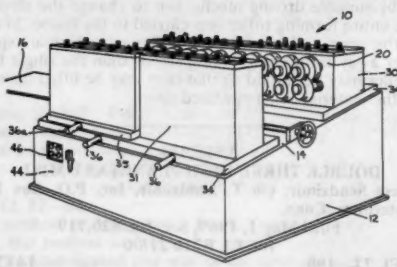
A continuous rolling mill, particularly a rod mill, in which the sets of rolls are arranged in two groups in series with one another, with two separate drives, each actuating one group of sets of rolls by means of intermediate gears, the first group of sets of rolls having a definite percentage reduction per pass from one set of rolls to the next, and a pull being exerted upon the stock that is being rolled between the last set of rolls of the first group and the first set of rolls of the second group, and the last set of rolls of the first group being switchable at will into the line of drive of either the first group or the second group, preferably by means of two shifting clutches operable alternatively, interposed between the last set of rolls of the first group and the two driving lines.

3,595,056

MACHINE FOR ROLL FORMING SECTIONS FROM SHEET MATERIAL

Andrew H. Hutton, Middletown, Ohio, assignor to Armco Steel Corporation, Middletown, Ohio

Filed July 11, 1969, Ser. No. 841,062
Int. Cl. B21d *5/08*
U.S. Cl. 72—181 **14 Claims**



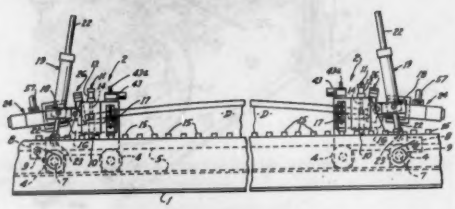
An improved machine and method for roll forming sections having a web which is provided with at least one flange from sheet material.

3,595,057

STRETCHER FOR STRETCH FORMING SHEET AND PLATE STOCK

Robert A. Mackenzie, Chagrin Falls, Ohio, assignor to The Cyril Bath Company, Cleveland, Ohio

Filed Apr. 15, 1969, Ser. No. 816,222
Int. Cl. B21d *11/02*
U.S. Cl. 72—302 **7 Claims**



The stretcher comprises a frame with two stretch units mounted thereon for adjustment toward and away from each other for accommodating therebetween selected lengths of sheet or plate stock to be stretched or stretch formed. A male die is supported between the units when stretch forming is to be effected.

Each unit comprises a linkage rockable by power means about a horizontal pivot extending transversely of the stock and tensioning dimension, and carries a stock gripping head.

Rocking of the linkages causes the heads to swing about their pivots in directions away from each other for stretching the stock and toward the frame for laying the stock onto the die.

The stretcher is characterized in that the horizontal pivot is adjustable along a path extending generally upwardly and downwardly normal to the plane of the stock, and the units can be latched securely in adjusted positions along the frame.

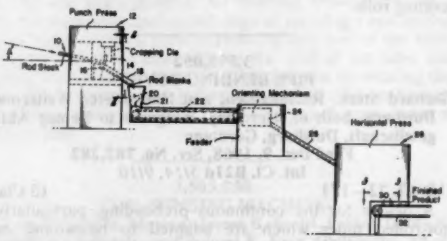
With these adjustments, a preselected exact amount of total stretch can be imparted to the stock.

3,595,058

METHOD OF FORMING SLUGS FROM ROD STOCK

Charles J. Beneke, Louisville, Ky., assignor to Reynolds Metals Company, Richmond, Va.

Filed Jan. 28, 1969, Ser. No. 794,581
Int. Cl. B21d *28/00, 22/00;* B21k *21/06*
U.S. Cl. 72—339 **9 Claims**



A method of forming slugs from rod stock which provides a work-hardened center and completely eliminates burrs from the slugs. Suitably sized and straightened rod stock is fed to a first press where it is subjected to the action of a pair of cropping dies to form a cylindrical blank. The latter is fed into an extrusion cavity of a second press, the volume of which is slightly more than the volume of the cylindrical

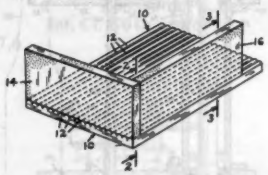
blank. When the cylindrical blank is impacted in this extrusion cavity a slug is formed with a work-hardened center and flat, unburred surfaces on the upper and lower peripheral surfaces thereof.

3,595,059

METHOD FOR SHAPING PRODUCTS MADE OF FOAM METAL BY PROGRESSIVE LOCALIZED CRUSHING OF FOAM STRUCTURE

George H. Erb, Cuttingsville, Vt., assignor to American Velcro Inc., Manchester, N.H.

Filed July 10, 1969, Ser. No. 840,772
Int. Cl. B21d *17/00*
U.S. Cl. 72—362 8 Claims



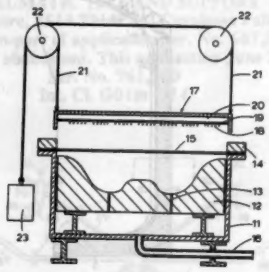
Method of shaping foam metal products to provide accurate fit of such products with surfaces such as ribbed or grooved surfaces of a rigid body of metal, glass, plastic and the like by crushing surface regions of a foam metal blank against the surface to which product is to fit. Crushing operation is carried out by progressively pressing blank against surface, with relative movement between blank and surface in direction of length of ribs or grooves, until, under combined effect of pressure and friction, surface regions of the blank permanently assume shape of surface. Relative movement and heat of friction imparts desirable burnishing and densification of the crushed surface regions of the foam metal product. Method provides low cost procedure for producing scrapers, doctor blades, walls or partitions which must accurately fit against a grooved or ribbed surface even though such surface has irregularly spaced grooves or ribs of nonuniform depth or height.

3,595,060

METHOD OF FORMING METAL ALLOYS

Bernard Brian Hundy, Woodstock, England, assignor to Pressed Steel Fisher Limited, Cowley, Oxford, England

Filed Mar. 18, 1969, Ser. No. 808,229
Claims priority, application Great Britain, Mar. 21, 1968, 13,678/68
Int. Cl. B21d *26/00*
U.S. Cl. 72—364 2 Claims



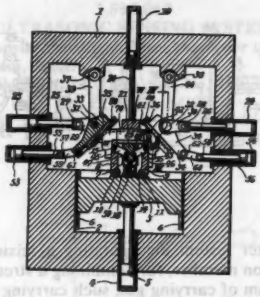
A method of forming superplastic metal alloys by heating the alloy to a temperature at which it is superplastic and then forming the alloy, in which the formed alloy is heated to a temperature above the superplastic temperature range in order to render it resistant to deformation before it is removed from the forming tool.

3,595,061

APPARATUS FOR FORMING CURVED METAL BARS SUCH AS AUTOMOBILE BUMPERS

Michio Bessho, Himeji-shi, Japan, assignor to Kawasaki Yuko Kabushiki Kaisha, Takasago-shi, Hyogo-ken, Japan

Filed Sept. 4, 1969, Ser. No. 855,092
Int. Cl. B21d *5/02*
U.S. Cl. 72—381 2 Claims



In forming apparatus of the type having a split-type male die assembly and a pair of female die members rockable to roll-bend the opposite end portions of the blank in cooperation with the male die assembly, a pair of auxiliary hydraulic assemblies are provided to drive the bottom portions of the respective female die members toward each other thereby to make the rolling action of the female members on the associated male members more accurate and stable irrespective of of the curvature required of the bumper end portions.

3,595,062

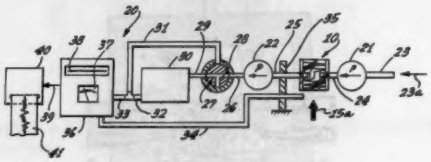
THERMOCOUPLES FOR DTA

Robert L. Stone, Austin, Tex., assignor to Columbia Scientific Industries Corporation, Austin, Tex.

Filed Apr. 5, 1968, Ser. No. 719,021
Int. Cl. G01n *25/00*
U.S. Cl. 73—15 B 12 Claims

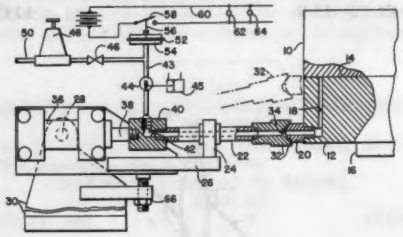
Apparatus for differential thermal analysis, which can exhibit good sensitivity, includes as a differential thermocouple a loop of wire shaped to accept and support a sample dish, a thermoelectric bead in the loop of wire, and at least one electric lead wire extending downwardly from the loop of wire such that it can support the loop of wire and the sample dish during analysis. A thermocouple which has two thermoelectric beads disposed in parallel between its leads exhibits good sensitivity for differential thermal analysis.

3,595,063
GAS ANALYZER SYSTEM
Johannes Martin Loew, Tailfingen, Germany, assignor to Fritz, Hellige & Co., G.m.b.H., Freiburg im Breisgau, Germany
Filed July 30, 1969, Ser. No. 846,180
Claims priority, application Germany, July 31, 1968, P 17 73 950.3
Int. Cl. G01n 31/00
U.S. Cl. 73—23 5 Claims



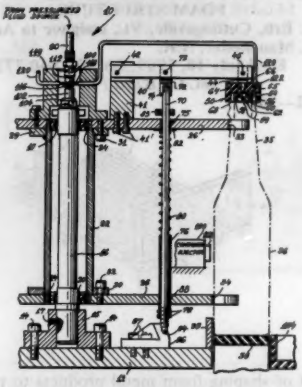
A gas analyzer system incorporating a mixing chamber, having a diffusion member, for combining a stream of mixing gas with a stream of carrying gas, such carrying gas containing a certain gas, the quantity of which transported in a unit of time will be determined by the gas analyzer system. The mixing chamber combines the aforementioned streams of gas to form a measuring gas which is then analyzed by the system. The system further includes an input pump and an output pump connected to the mixing chamber so as to provide equal quantities of gas transport per unit time within the mixing chamber. A diffusion container may be incorporated between the output pump and the analyzing portion of the system so as to further ensure proper diffusion of the gases.

3,595,064
SEPARATION DETECTOR
Walter H. Van Deberg, Berkley, Mich., assignor to Earl A. Thompson Manufacturing Co., Ferndale, Mich.
Filed Aug. 28, 1969, Ser. No. 853,909
Int. Cl. G01m 3/26
U.S. Cl. 73—37 7 Claims



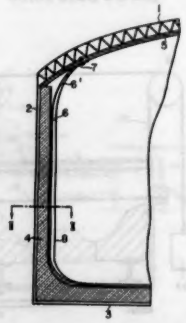
Separation of mating faces in a pattern for forming sand molds is detected by blowing air into a passage through one of the mold halves terminating against the parting face of the other mold half and by measuring the pressure in the passage. Apparatus for performing this detection has a tube slidable in and out against a connection on the pattern leading to the passage. Air is supplied to this tube under control of an on-off valve at a constant pressure source through a control orifice. A pressure sensor is connected to the tube. The tube is slidably mounted in a bracket and is moved against the mold or away from it by a double-acting hydraulic cylinder. The bracket is pivoted to a fixed support so that the tube can follow movement of the pattern while maintaining pressuretight connection with it.

3,595,065
DIFFERENTIAL PRESSURE CROWN INSPECTOR
Harry E. Scribner, 18600 Glenwood Lane, Brookfield, Wis.
Filed Sept. 17, 1969, Ser. No. 858,576
Int. Cl. G01m 3/02
U.S. Cl. 73—37 10 Claims



This apparatus inspects the top of bottles, containers or other articles as they move along on a conveyor past an inspection position. Resilient sensor heads are carried on rotating star wheels which engage each container in turn. One sensor head engages the top of a bottom or container and fluid under pressure or vacuum is applied to the head. If the top of the bottle container is defective, fluid leaks thereover and an ejection device is operated that automatically ejects the defective bottle or container.

3,595,066
METHOD OF HYDROSTATICALLY TESTING A STORAGE TANK FOR LOW TEMPERATURE LIQUEFIED GASES
Katsuro Yamamoto, Tokyo, Japan, assignor to Bridgestone Liquefied Gas Company Limited, Tokyo, Japan
Filed Nov. 3, 1969, Ser. No. 873,362
Claims priority, application Japan, Nov. 4, 1968, 43/80268
Int. Cl. G01m 3/02
U.S. Cl. 73—37 3 Claims



A method for hydrostatically testing storage tanks for liquefied gases of the type having an inner suspended membrane upstanding corrugations. The corrugations extending outwardly of the inner tank are supported by the outer tank but the innerwardly extending corrugations are supported during the test with resilient air-filled hoses closed at the

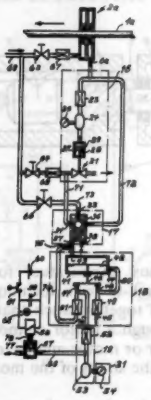
lower end and interposed between the outer tank and the outer tank. The hoses are spaced circumferentially of the inner tank and vertically in the spaces between an outer tank insulating liner and the inwardly extending corrugations.

3,595,067

METHOD AND APPARATUS FOR DETERMINING THE FIRMNESS OF FILLERS IN CIGARETTE RODS OR THE LIKE

Joachim Von Der Lohe, Hamburg; Heinz Gretz, Hamburg, and Uwe Heitmann, Luneburg, all of, Germany, assignors to Hauni-Werke, Harbor & Co. KG, Hamburg, Germany

Filed Oct. 2, 1968, Ser. No. 764,482
Claims priority, application Germany, Oct. 9, 1967, P 16 32 208.0
Int. Cl. G01b *13/08*
U.S. Cl. 73—37.6 28 Claims



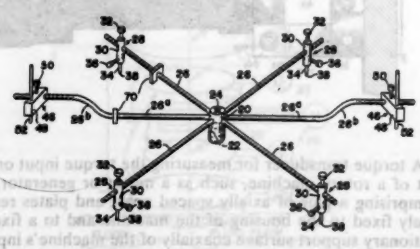
The firmness of rodlike filters in cigarettes or cigarette rods is determined by directing an air stream against the wrapper of a cigarette or cigarette rod and by measuring the extent of deformation which the filler undergoes in response to deforming pressure of the air stream. The results of measurements can be utilized to furnish visual indications of firmness, to furnish visual indications of differences between a desired firmness and the measured firmness, to furnish visual indications of average firmness of predetermined adjustment of the machine which produces the filler.

3,595,068

METHOD AND APPARATUS FOR BALANCING PNEUMATIC TIRE AND SUPPORT

Frank O. Skidmore, 2513 Third St., Cuyahoga Falls, Ohio

Continuation-in-part of application Ser. No. 667,573, Sept. 13, 1967, now abandoned. This application June 26, 1968, Ser. No. 761,360
Int. Cl. G01m *1/14*
U.S. Cl. 73—66 6 Claims



The method of substantially dynamically and statically balancing a pneumatic tire and its support wheel or rim which includes the steps of

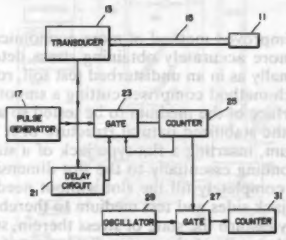
1. measuring the distance that sidewall and/or tread portions of the tire extend axially from the support to determine any differences in these distances,
2. compensating for any differences in the distances by securing a compensating weight on the support diametrically opposite to the greatest difference distance to thereby balance statically with a compensating weight, positioned on the opposite side of the tire support in alignment in an axial direction.

3,595,069

ULTRASONIC SENSING SYSTEM

Kenneth A. Fowler, Medfield, Mass., assignor to Panametrics, Inc., Waltham, Mass.

Filed Feb. 14, 1969, Ser. No. 799,333
Int. Cl. G01n *24/00*
U.S. Cl. 73—67.2 11 Claims



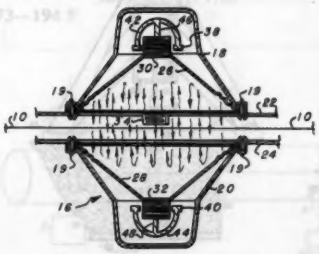
The system disclosed herein employs an ultrasonic sensor having an acoustic resonance frequency which is a function of a parameter to be measured. Acoustic energy is applied to the sensor in a single pulse having a duration which is on the order of half the period of the nominal resonance frequency of the sensor. The sensor then rings substantially at its exact resonance frequency. After a delay which permits transient effects to die out, the ringing frequency is determined by timing several cycles of the ringing, the frequency so determined being indicative of the value of the sensed parameter.

3,595,070

MOISTURE AND TEMPERATURE DETECTION

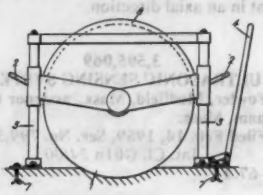
Philip N. Smith, Spartanburg, S.C., assignor to Deering Milliken Research Corporation, Spartanburg, S.C.

Filed Dec. 22, 1969, Ser. No. 886,827
Int. Cl. G01n *5/02*
U.S. Cl. 73—73 10 Claims



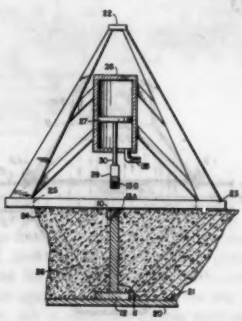
Method and apparatus to continuously detect and measure the moisture level and/or temperature of a moving web of material. The web of material is run between a pair of vibrating members which rapidly move air back and forth through the web of material to bring the moisture content of the air into equilibrium with the moisture content of the fabric.

3,595,071
METHOD FOR DETERMINING STRESSES IN SOIL
Manuel Coelho Mendes Da Rocha, Av dos Estados Unidos da America, 95-3 Dt ; Jorge Neves Da Silva, Rua Cabo Verde, 14-2 Dt , and Joao Jose Andrade Baptista Lopes, Av do Brasil 182-1 A, all of Lisbon, Portugal
Filed Sept. 26, 1967, Ser. No. 670,699
Int. Cl. G01n 3/00
U.S. Cl. 73—88 2 Claims



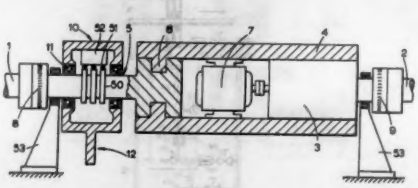
A novelly improved method of more economically expeditiously and more accurately obtaining stress determinations existing originally as in an undisturbed test soil, rock or other medium which method comprises cutting a smooth, very thin slot in the surface of the medium to be tested so as not to unduly disturb the stabilized natural structure of it and the adjoining medium, inserting a flat-type jack of a size and thinness corresponding essentially to the slot dimension so as to substantially completely fill the slot without need of infilling between the jack sides and test medium to thereby minimally and negligibly disturb the state of stress therein, subsequently applying on the walls of the major dimension of the slot, by means of a fluid pressure directed into said flat-jack, a force to cancel those minimal stresses in the test medium resulting from the initial cutting of the slot, and then finally measuring the pressure strains exerted by the fluid pressure in said jack on the sidewalls of the slot, whereby initial stress which existed in the test medium before the application of a disturbing action can be readily calculated. Such calculations may be derived from using the known mathematical theory of elasticity, and further a graphic curve can be plotted of the deformations as a function of the slot depth from which to derive the modulus of elasticity of the test medium.

3,595,072
CONCRETE TESTING MEANS
Owen Richards, 4306 Rosemary St., Chevy Chase, Md.
Filed July 22, 1969, Ser. No. 843,448
Int. Cl. G01n 3/00
U.S. Cl. 73—88 4 Claims



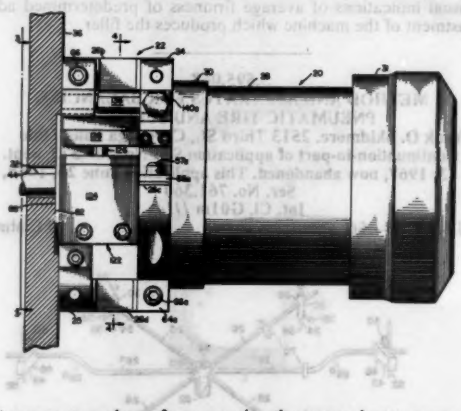
The strength of concrete or equivalent materials is tested in situ after various degrees of cure by means of one or more test members buried in place in the green concrete slurry. The member has a shank with an enlarged head which can be stressed until the concrete fractures to leave a crater, thus giving a rupture modulus strength value and permitting inspection of the interior concrete structure. Destructive testing is not necessary if a predetermined strength value is to be tested and the concrete withstands the test. This provides a test of the actual conditions found in any structural site and under conditions which may otherwise vary with shape, cure conditions, etc.

3,595,073
METHODS AND ARRANGEMENTS FOR TESTING INDUCTION MOTORS
David Gwilym Orwel Morris, Flat C, 5 Kensington, Church St., London, W.8, England
Filed Apr. 16, 1968, Ser. No. 721,864
Claims priority, application Great Britain, Apr. 19, 1967, 17890/67
Int. Cl. G01l 3/22
U.S. Cl. 73—134 19 Claims



Method apparatus Apparatus for testing induction machines by the back-to-back technique. The shafts of the motors are coupled together such that they will turn in the same direction through a motor or motor and gearbox combination. The motor or motor and gearbox combination enables the torques in the shafts of the motors being tested to be balanced.

3,595,074
TORQUE TRANSDUCER
Clarence Johnson, 31649 Trillium Trail, Cleveland, Ohio
Filed Oct. 30, 1968, Ser. No. 771,868
Int. Cl. G01l 3/02
U.S. Cl. 73—136 R 34 Claims



A torque transducer for measuring the torque input or output of a rotary machine, such as a motor or generator, and comprising a pair of axially spaced apart end plates respectively fixed to the housing of the machine and to a fixed or stationary support surface coaxially of the machine's input or output shaft axis and a plurality of flexure plates each disposed axially between and clamped at opposite ends to the end plates. The rotary machine is supported solely by the

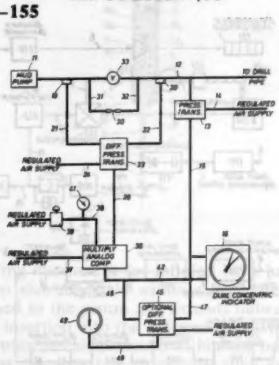
torque transducer from the support surface such that when it is horizontally oriented it is mounted in cantilever fashion at the unsupported ends of the flexure plates. By operating such rotary machines as a motor or generator, a reaction or countertorque, which is proportional to the torque input or output, is produced and applied to the housing of the machine. The flexure plates are flexed and twisted under the influence of the applied reaction torque, allowing the housing of the machine to turn about the torque transferring shaft axis through an angle that is closely proportional to the torque input or output of the machine. This angle of rotation is measured to provide a readout of the magnitude of torque input or output.

3,595,075

METHOD AND APPARATUS FOR SENSING DOWNHOLE WELL CONDITIONS IN A WELLBORE

Ethell J. Dower, Houston, Tex., assignor to Warren Automatic Tool Company, Houston, Tex.

Filed Nov. 10, 1969, Ser. No. 875,462
Int. Cl. E21b *47/06*
U.S. Cl. 73—155 **6 Claims**



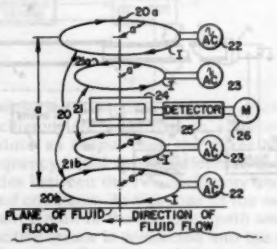
A method and apparatus for sensing downhole well conditions in a wellbore having a drill string suspended therein and pump means and conduit means for circulating drilling fluid down the well. The apparatus includes a pressure transmitter for sensing the circulating pressure of input drilling fluid being circulated down the well and generating a first signal representative thereof. It could also include means in the form of a differential pressure transmitter for sensing a pressure drop of the drilling fluid along a portion of the conduit means and generating a second signal representative thereof. Readout means in the form of dual concentric pressure gauges are provided for reading out a change between the signals as an indication of a change in downhole well conditions, such as loss of drilling fluids or incursion of formation fluids into the well.

3,595,076

DEVICE FOR MEASURING VELOCITY

Leonard J. Eyges, 21 North Road, Bedford, Mass.

Filed May 12, 1969, Ser. No. 823,588
Int. Cl. G01p *5/08*
U.S. Cl. 73—194 EM **7 Claims**



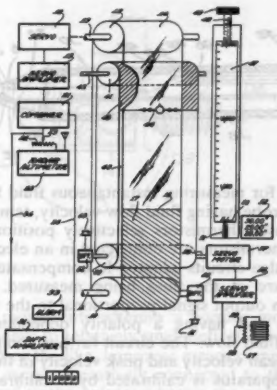
A device for measuring the relative speed of an object which is moving with respect to a conducting fluid or vice versa and which includes means for establishing a primary magnetic field through the fluid and means for detecting and measuring the secondary magnetic field induced by said primary field in a manner such that the primary field does not substantially disturb the measurement of the secondary field.

3,595,077

ALTIMETER

Earl Stuart Perkins, Oak Brook, Ill., assignor to Butler National Corporation, Oak Brook, Ill.

Filed May 21, 1969, Ser. No. 826,529
Int. Cl. G01c *21/00*
U.S. Cl. 73—178 **6 Claims**



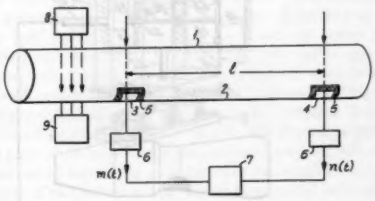
An altimeter which continuously presents to the pilot of an aircraft the altitude of the aircraft above ground and in which the ground reference moves relative to a fixed sea level reference with inputs to the altimeter being supplied by barometric altimeters and absolute altimeters. A pair of moving belts are supported between two pairs of rollers and carry indicia for showing the relationship between the aircraft, sea level and the ground beneath the aircraft.

3,595,078

POWDER FLOW MEASUREMENT

Maurice Sidney Beck, 10 Hazelhurst Road, Bradford 9, Yorkshire, England, and Andzrej Plaskowski, ul. Anielewicza 33 m 27, Warsaw, Poland

Filed Apr. 3, 1968, Ser. No. 756,969
Claims priority, application Great Britain, Sept. 6, 1967, 40688/67
Int. Cl. G01f *1/00*
U.S. Cl. 73—194 F **11 Claims**



The flow of a particulate material when conveyed hydrodynamically by means of a flowing fluid has a noise

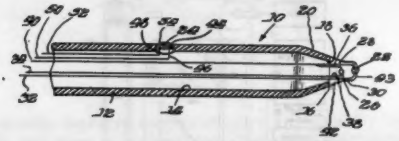
content consisting of random variations in the concentration of the particulate material. This noise content is sensed at two points separated by a known distance along the flow path of the material, and the sensed disturbances are cross-correlated to establish a transit time for a given disturbance between the two points, thus enabling the flow rate of the particulate material to be determined.

3,595,079

FLUID FLOW VELOCITY MEASURING APPARATUS

Allen R. Grahn, Chicago, Ill., assignor to Northwestern University, Evanston, Ill.

Filed Nov. 13, 1967, Ser. No. 682,355
Int. Cl. G01f 1/00
U.S. Cl. 73—204 11 Claims



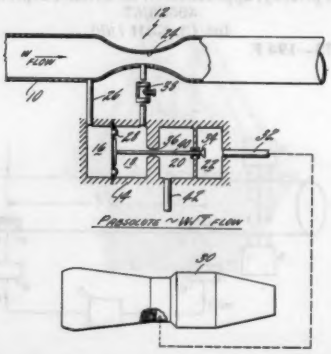
Apparatus for measuring instantaneous fluid flow velocity including a probe having fluid flow velocity, temperature and direction sensor thermistors selectively positioned thereon. The sensor thermistors are connected in an electrical circuit including bridge circuits adapted to compensate for changes in temperature of the fluid being measured. The circuit establishes an output signal proportional to the flow velocity of the fluid and having a polarity dependent upon the direction of fluid flow. The circuit further computes the acceleration, mean velocity and peak velocity of fluid flow. The measuring apparatus is calibrated by a calibrator having a piston-cylinder arrangement adapted to effect predetermined fluid flow through a flow conduit which supports the probe such that its sensor thermistors are disposed within the flow stream. The calibrator includes a potentiometer circuit operative to establish an electrical signal proportional to the velocity of fluid flow past the probe sensors. The output signal of the measuring apparatus may then be compared to the signal produced by the calibrator potentiometer circuit and the measuring apparatus adjusted to bring the signals into desired phase and magnitude relation.

3,595,080

FLOW SENSOR

George C. Rannenberg, Granby, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

Filed Nov. 5, 1968, Ser. No. 773,495
Int. Cl. G01l 13/02
U.S. Cl. 73—213 3 Claims



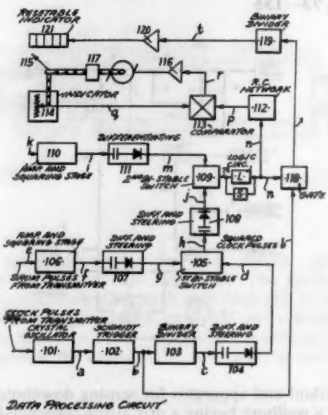
A mass flow sensor for a compressible fluid applies pressure upstream of the throat of a venturi to one side of the diaphragm and the pressure between three serially connected restrictions leading fluid from a high pressure source to the throat of the venturi to the other side of the diaphragm. The first restriction is made variable and attached to the diaphragm such that the pressure between it and the second restriction is regulated so that said intermediate pressure is proportional to the mass flow through the venturi.

3,595,081

FLOWMETERS

William A. Byars, London, England, assignor to Elliott Brothers (London) Limited, London, England

Filed Sept. 16, 1968, Ser. No. 762,232
Claims priority, application Great Britain, Sept. 28, 1967, 44,187/67
Int. Cl. G01f 1/06
U.S. Cl. 73—231 R 7 Claims



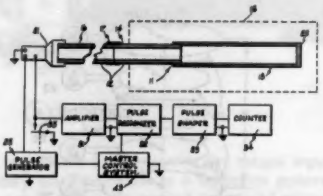
A fluid flowmeter which gives an output pulse for each unit of fuel passing through the meter and which also gives pulses at a characteristic "zero flow" rate when no fluid is flowing. Inhibitor means are provided to prevent zero flow rate pulses from affecting the indicator means and in order to check the accuracy of the flowmeter switch means are provided for overriding the inhibitor means at will so that zero flow rate pulses may be used to give a flow rate indication.

3,595,082

TEMPERATURE MEASURING APPARATUS

Park H. Miller, Jr., Del Mar, Calif., assignor to Gulf Oil Corporation

Filed Mar. 4, 1966, Ser. No. 531,985
Int. Cl. G01k 11/24
U.S. Cl. 73—339 A 8 Claims



A method and apparatus for measuring temperature under difficult environmental conditions, in which the temperature

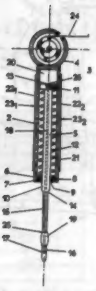
of a fluid between two reflective means is determined acoustically by recording the received reflections and determining their spacing by pulse compression techniques.

3,595,083

MEASURING INSTRUMENT FOR BALLS AND THE LIKE

Horst Rudolf Dassler, Vaduz, Liechtenstein

Filed Apr. 28, 1969, Ser. No. 819,589
Claims priority, application France, Nov. 14, 1968, 173,645
Int. Cl. B60c 23/02; G01l 7/16; G01g 3/02
U.S. Cl. 73—389 5 Claims



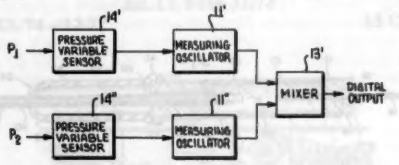
A measuring instrument for inflated balls having a spring biased piston slideably held within a graduated cylinder. A pin is attached to the piston and extends outwardly from the cylinder for insertion into the valve of a ball. The pin is hollow and permits the air pressure within the ball to push the piston against its spring bias to indicate such pressure on the graduated cylinder. The same structure also provides means for weighting the ball by supporting it on the pin and determining the amount of spring deflection, and said instrument includes a linear measuring device for measuring the ball dimensions.

3,595,084

DIGITAL TRANSDUCER SYSTEM

Robert N. Bailey, and James L. Strom, both of Augusta, Ga., assignors to Continental Can Company, Inc., New York, N.Y.

Filed Feb. 27, 1970, Ser. No. 14,778
Int. Cl. G01l 9/12
U.S. Cl. 73—398 14 Claims



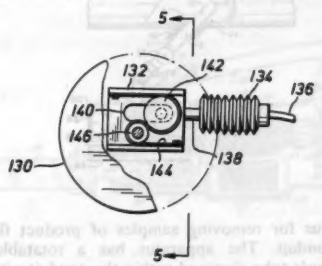
A digital measuring transducer system is disclosed wherein a pair of oscillators are employed in combination with a mixer to produce an output from the mixer having a pulse repetition frequency equal to the difference in pulse repetition frequencies between the two oscillators and representative of a sensed condition. At least one of the oscillators employs a resonant circuit in the feedback path and a pressure-variable capacitive sensor is connected into the resonant circuit to vary the output frequency of the associated oscillator to produce a difference in frequencies between the two oscillators and a resultant output from the mixer indicative of the pressure condition adjacent the sensor. The second oscillator may be a reference oscillator providing a predetermined reference output frequency or the second oscillator may have a pressure-variable capacitive sensor associated therewith such that the pulse or digital output from the mixer is representative of differential pressure.

3,595,085

INDICATING DEVICES

Robert S. Harrah, 4108 DuPont, Houston, Tex.

Division of Ser. No. 731,950, May 24, 1968, Pat. No. 3,555,909
Filed Mar. 9, 1970, Ser. No. 17,601
Int. Cl. G01l 7/04
U.S. Cl. 73—410 14 Claims



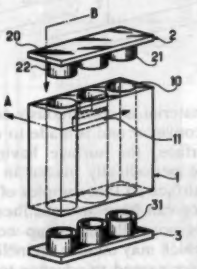
In meter movements wherein a pointer moves across a scale in response to relatively small deflections of a Bourdon tube, bellows or the like, improved means comprising motion transferring means operatively connected to the transducer and connected to the pointer wherein the pointer is rotated relative to the scale by operation of a frictionless and gearless mechanism converting the transverse movement of the transducer to rotation of the pointer.

3,595,086

EXTRACTION AND STORAGE ARRANGEMENT

Claude Jean-Philippe Bonnet, Paris; Robert Laucournet, L'Hay-Les-Roses, and Jean Alexandre Guigan, Paris, all of, France, assignors to F. Hoffmann-La Roche & Co. Aktiengesellschaft, Basle, Switzerland

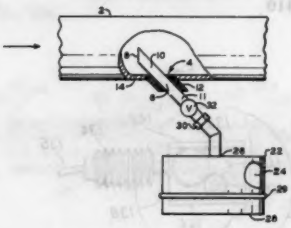
Filed Nov. 20, 1969, Ser. No. 878,477
Claims priority, application France, Dec. 27, 1968, Nov. 21, 1968, PV 181344/68;PV 174805/68
Int. Cl. G01n 1/18
U.S. Cl. 73—421 R 18 Claims



Device for sampling and multiple stocking of a liquid substance, includes a compact set of tubes arranged in a row with the openings of each end face stopped up by a plug. The set of tubes are fitted, near one of its ends, with channels communicating between the tubes when the plug at said end

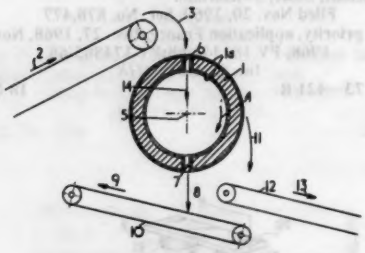
is in a first position, but isolates each tube when the plug is in a second position.

3,595,087
SAMPLING APPARATUS
Robert W. Starks, Merrillville, Ind., assignor to Phillips Petroleum Company
Filed Oct. 20, 1969, Ser. No. 867,731
Int. Cl. G01n 1/20
U.S. Cl. 73—422 R 4 Claims



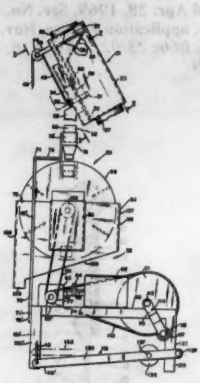
An apparatus for removing samples of product flowing through a conduit. The apparatus has a rotatable and reciprocal sample tube disposed within the conduit with said tube being movable to various positions within the conduit.

3,595,088
METHOD AND APPARATUS FOR SAMPLING GRANULAR SOLID MATERIAL
Henry-Gilbert Meunier, Liege, Belgium, assignor to Centre National De Recherches Metallurgiques, Brussels, Belgium
Filed Aug. 5, 1969, Ser. No. 847,600
Claims priority, application Luxembourg, Oct. 10, 1968, 57063
Int. Cl. G01n 1/20
U.S. Cl. 73—424 3 Claims



Granular solid material is continuously supplied to a surface by a suitable conveyor and is made to advance continuously over the surface, the surface having one or more openings which are periodically placed in the path of the material over the surface so that samples of the material fall through. The surface can have an antiadhesive coating. The sampled material is normally taken up continuously by a suitable conveyor which may include an inclined surface over which the samples are caused to advance to form a continuous train of sampled material. In a preferred form, the granular material is supplied to the upper surface of a drum which has its axis horizontal and has longitudinal gaps in its cylindrical surface. The drum is rotated so that material periodically falls in at the top of the drum and the sampled material within the drum periodically falls out at the bottom of the drum.

3,595,089
ROTARY GRAIN SAMPLER DEVICE
Frank J. Jirik, Fisher, Minn.
Filed Sept. 23, 1969, Ser. No. 860,330
Int. Cl. G01n 1/10
U.S. Cl. 73—424 4 Claims



The invention comprises a main diverter mechanism and a subdividing mechanism. The main diverter mechanism has a reciprocating pivotably mounted funnel which pivots back and forth through a stream of grain to divert a sample of the grain. The subdividing mechanism has a rotary wheel with diverting funnels mounted therein with the rotary wheel receiving the diverted sample of grain and the funnel in the rotary wheel subdividing and diverting a further sample of the grain. The rotary wheel has a pair of annular side flanges to hold the funnel within open areas therebetween to allow the portion of the grain not diverted by the funnel in the rotary wheel to pass through the open areas in the wheel. A housing surrounds the lower end of the wheel and receives the grain passing through the open areas in the wheel. The housing has a spout opening at its lower end to allow the grain to travel out of the housing.

3,595,090
APPARATUS FOR DRAWING FLUID INTO, AND DISCHARGING FLUID FROM, A PIPETTE
Michael E. Drummond, Springfield, and John E. Robinson, West Chester, both of, Pa., assignors to Drummond Instrument Company, Broomall, Pa.
Filed Sept. 17, 1969, Ser. No. 858,809
Int. Cl. G01n 1/14
U.S. Cl. 73—425.6 9 Claims

An apparatus for drawing fluid into, and discharging fluid from, a pipette. The apparatus includes a tubular member having caps sealing both ends thereof, a pipette partially inserted into the tubular member through one of the caps and a cylindrical member inserted through the other cap partially into the tubular member. A piston is slidably positioned therein and has a plunger manually operated so as to move the piston longitudinally of the cylindrical member. A squeeze bulb is fitted over a terminal of the tubular member, the squeeze bulb having an aperture through which the cylindrical member extends and complete evacuation of the tube is effected by exerting pressure on the squeeze bulb which

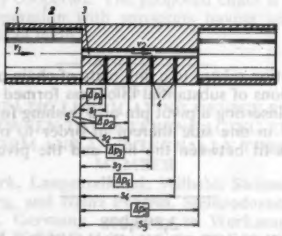
forces air into the pipette to expel any fluid remaining therein. The outer periphery of the cylindrical member is slightly spaced from the wall of the cap defining the aperture therein to provide communication between the squeeze bulb and the interior of the tubular member.

3,595,091

METHOD AND APPARATUS FOR DETERMINING THE GRAIN STRUCTURE OF DISPERSED SOLID MATERIALS AND FOR DETERMINING THE INSTANTANEOUS SOLID MATERIAL CONTENT OF FLOWING GASES

Paul Bernutat, Cecilien Allee 68, 4000 Dusseldorf, Germany

Filed Nov. 24, 1969, Ser. No. 879,311
Claims priority, application Germany, Nov. 25, 1968, P 18 10 711.4
Int. Cl. G01n *15/02*
U.S. Cl. 73—432 PS 4 Claims



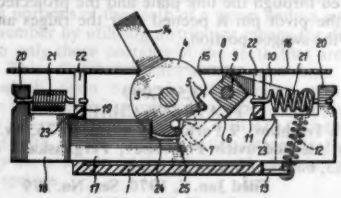
A method of and device for determining the grain structure of dispersed solid materials and for determining the momentary contents in solid particles in a gas flow, according to which the solid particle-gas flow is in a measuring nozzle subjected to a change in velocity, and in which the pressure differences inherent to the different behavior of the solid particles in said gas flow during the change in the velocity of the gas flow are measured over the length of the measuring nozzle whereupon from the course in the change of pressure over the length of the nozzle the grain structure of the dispersed solid particles and the momentary contents in solid particles are calculated.

3,595,092

TUNER FOR COMMUNICATION CARRIERS

Rudolf Mayer, and Helmut Storz, both of Rottweil, Germany, assignors to Messrs. R & E Hopt KG, Rottweil, Germany

Filed July 28, 1969, Ser. No. 845,266
Claims priority, application Germany, July 31, 1968, P 17 66 860.9
Int. Cl. F16h *35/18*
U.S. Cl. 74—10.27 13 Claims



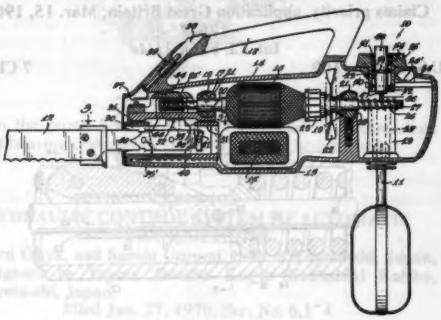
Turners for communication carriers, especially for radio and television sets, having a number of switches which can be shifted from the off-position to the on-position against the action of a spring. The switches are retained in the on-position by stop members interconnected in such a manner that, when one switch is shifted to its on-position, all of the other switches are released for return into their off-position. The switches take the form of toggle switches comprising switch buttons rocking about a common axle and having a circular notched section provided concentrically with their axle of rotation.

3,595,093

ELECTRIC KITCHEN APPLIANCE

Jean P. Du Bois, Niles, and Eugene S. Wassel, La Grange, both of, Ill., assignors to Sunbeam Corporation, Chicago, Ill.

Continuation of application Ser. No. 464,286, June 16, 1965, now abandoned. This application Sept. 23, 1968, Ser. No. 761,780
Int. Cl. F16h *19/02*
U.S. Cl. 74—16 2 Claims



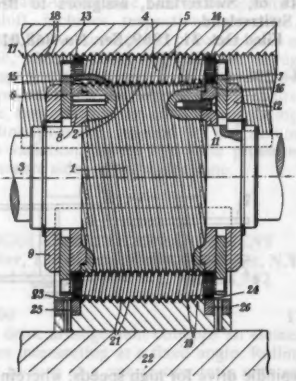
A combined electric hand mixer and knife having an elongated housing with knife blades extending lengthwise from one end thereof and mixer beaters depending from the other end thereof with separate control means to function when the unit is used for either cutting or mixing.

3,595,094

RACK AND WORM MECHANISM

Pierre Lemor, Ville D'Avray, France, assignor to Aktiebolaget Svenska Kullagerfabriken, Goteborg, Sweden

Filed June 27, 1969, Ser. No. 837,077
Claims priority, application France, June 27, 1968, 156,850
Int. Cl. F16h *27/02, 1/18, 55/04*
U.S. Cl. 74—89.14 2 Claims



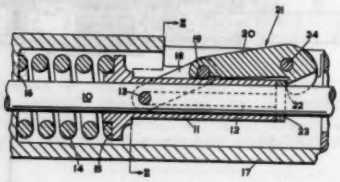
Device for transforming a movement of rotation into a movement of translation by means of a high-efficiency rack

and worm mechanism characterized in that the rack teeth formed on one portion of a cylinder consist of a multithread tapping of a solid member, in that the worm coaxial with said rack has a number of threads generally equal to that of said rack, and that a plurality of externally screw-threaded planet rollers are disposed around said worm and mesh both with said worm and said rack, the helix angle of the threads formed on said planet rollers threads being the same as that of the worm threads and of opposite direction whereby the planet rollers rolling without slip on the worm are held against any axial movement in relation to said worm.

3,595,095
BIASSING DEVICES

Brian Neville Read, and Reginald John Holmes, both of Stafford, England, assignors to The English Electric Company Limited, London, England

Filed Mar. 17, 1969, Ser. No. 807,549
Claims priority, application Great Britain, Mar. 15, 1968, 12637
Int. Cl. F16h *21/44*
U.S. Cl. 74—100 **7 Claims**

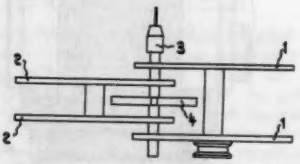


A biassing device for biassing an actuator member which is longitudinally movable between two limiting positions to the direction in which it has been moved beyond a position intermediate the two positions. The device comprises a pair of link members pivotally engaging the actuator member at the ends of a transverse pin, and a bellcrank lever pivoted at its elbow on a fixed pivot and pivotally engaging the link members at one of its arms. Movement of the other arm of the bellcrank lever in response to movement of the actuator member is referred to a helical compression spring coaxially arranged on the actuator member by a sleeve formed with slots through which the pin projects to engage the link members.

3,595,096
DRILL-SPINDLE DRIVE FOR HIGH SPEEDS

Karl Adler, Grenchen, and Georges Ducommun, Feldbrunnen, both of, Switzerland, assignors to Biviator S. A., Geneva, Switzerland

Filed Oct. 21, 1969, Ser. No. 868,019
Int. Cl. F16h *13/02, 15/08*
U.S. Cl. 74—206 **5 Claims**

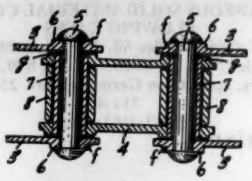


A drill-spindle drive for high speeds, wherein the spindle is held between supporting and driving rollers, radial vibration of the spindle being avoided and high precision obtained by selecting the angle between the normals at the points of contact of each two corresponding rollers of the supporting and driving roller system with the drill spindle at most 100°.

3,595,097
A CHAIN INCLUDING LINK PLATES HAVING SWAGED PORTIONS

Kumakichi Araya, No. 2, Daishoji Seki-machi, Kaga-shi, Ishikawa-Prefecture, Japan

Filed July 1, 1969, Ser. No. 838,181
Claims priority, application Japan, Feb. 24, 1969, 44-13218
Int. Cl. F16g *13/02*
U.S. Cl. 74—250 **5 Claims**

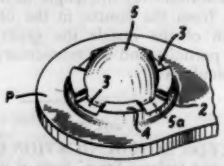


This invention relates to a link plate of chain provided with swaged portions of substantial thickness formed around each opening for inserting a pivot pin or a bushing for mounting a sleeve roller in one side thereof in order to obtain an improved press fit between the link and the pivot pin or the bushing.

3,595,098
PIN LINK PLATE OF CHAIN HAVING A DETENT MEANS FOR PIVOT PIN

Araya Kumakichi, No. 2, Daishoji Seki-machi, Kaga-shi Ishikawa-prefecture, Japan

Filed July 1, 1969, Ser. No. 838,182
Claims priority, application Japan, Feb. 24, 1969, 15,551/69
Int. Cl. F16g *13/02*
U.S. Cl. 74—250 **3 Claims**



This invention relates to a pin link plate of chain having detent means for receiving a pivot pin inserted into an end opening thereof. The detent means includes a plurality of ridges and depressions disposed alternately along a top edge of a tubular swaged portion formed around each opening perforated through the link plate and the projected end portion of the pivot pin is peened over the ridges and depressions of the swaged portion.

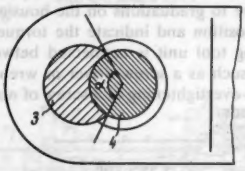
3,595,099
FLAT-LINK CHAIN

Ilya Ilich Ivashkov, 9 Parkovaya ulitsa 43/26, kv. 198, and Vasily Alexandrovich Frolovtsev, Ferganskaya ulitsa, 18, kv. 263, both of Moscow, U.S.S.R.

Filed Jan. 2, 1970, Ser. No. 279
Int. Cl. F16g *13/04*
U.S. Cl. 74—251 R **1 Claim**

A flat-link chain, hinge joints of whose links are formed by supporting members secured at the end portions of plates and contacting each other by their external working surfaces of which one is convex and the other is concave, in which chain the angle, formed by the planes passing through the axis of the supporting member having a convex working surface and the edges of the working surfaces of the supporting member having a concave working surface, and embracing

the concave working surface is not less than $720°/n$, wherein n is the number of teeth of the smallest sprocket with which



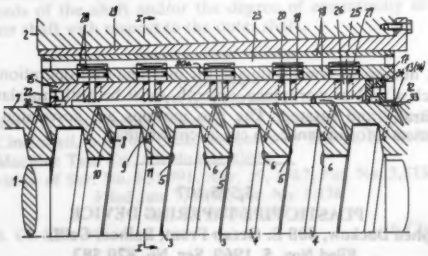
the chain may cooperate. The proposed chain is reliable and durable in operation with sprockets having any predetermined number of teeth.

3,595,100

HYDROSTATIC LUBRICATING DEVICE FOR THE ZONES BETWEEN THE INTERENGAGING ELEMENTS OF A WORM AND AN INTERNALLY THREADED MEMBER

Friedrich Stark, Langensellbold; Wilhelm Steinmetz, Dorfles near Coburg, and Heinz Pohlein, Steinrodortsteil Blumenrod, all of, Germany, assignors to Werkzeugmaschinenfabrik Adolf Waldrich Coburg, Coburg, Germany

Filed July 10, 1969, Ser. No. 840,743
Claims priority, application Germany, July 12, 1969, P 17 75 174.5
Int. Cl. F16h *1/20*
U.S. Cl. 74—409 **8 Claims**



A hydrostatic lubricating device for lubricating the interengaging portions of the teeth of a worm and an internally threaded member by utilizing distributor means for directing lubricant to only those portions of the teeth that are in engagement. This distributor means comprise bars having openings which open to and communicate with other openings in the internally threaded member to supply lubricant to the interengaging teeth. The bars are maintained in engagement with a side surface of the internally threaded members by the pressure on the lubricant and additionally, if desired, by springs.

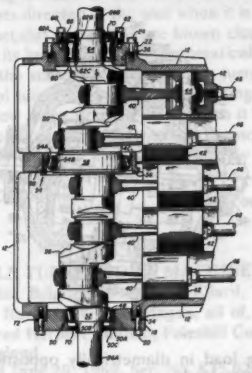
3,595,101

RECIPROCATING PUMP HAVING IMPROVED CRANKSHAFT BEARING ARRANGEMENT

Jesse F. Cooper, Jr., Tulsa, Okla., assignor to Gaso Pump and Burner Manufacturing Company, Tulsa, Okla.

Filed July 11, 1969, Ser. No. 840,937
Int. Cl. F16c *9/03*
U.S. Cl. 74—596 **6 Claims**

In a pump employing a crankshaft to reciprocally drive pistons within cylinders, the crankshaft is rotatably supported



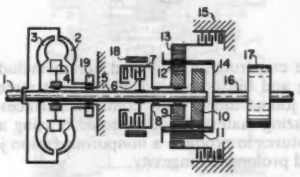
within the pump housing by a forward and an intermediate thrust bearing unit and a rearward straight bearing unit.

3,595,102

HYDRAULIC CONTROL SYSTEM OF AUTOMATIC TRANSMISSIONS

Minoru Ohya, and Sumio Uozumi, both of Toyota-shi, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyoto-shi, Japan

Filed Jan. 27, 1970, Ser. No. 6,174
Claims priority, application Japan, May 9, 1969, 44/35560
Int. Cl. F16h *47/00;* **B60k** *21/10*
U.S. Cl. 74—645 **7 Claims**



An automatic transmission, for motor vehicles and the like, includes a torque converter having at least one stator wheel, a speed change gear connecting the converter to an output shaft, and hydraulic servos controlling components of the speed change gear. A hydraulic control system for the automatic gear shift includes respective hydraulic pressure sensing openings in the suction and pressure sides of at least one stator vane, and a pressure regulating valve regulating a line pressure applied to the servos. A control valve is subjected to the pressures on the suction and pressure sides of the stator vane, and controls the pressure regulating valve to regulate the line pressure, applied to the servos, in accordance with variations in the hydraulic pressures on the suction and pressure sides of the stator vane.

3,595,103

ANGULAR DRIVE ARRANGEMENT

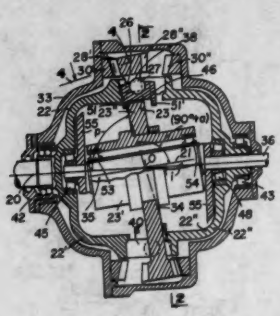
Ernest Wildhaber, 124 Summit Drive, Rochester, N.Y.

Filed May 29, 1969, Ser. No. 828,942
Int. Cl. F16h *1/28*
U.S. Cl. 74—800 **12 Claims**

This angular drive arrangement contains an element and a part having axes intersecting at a fixed angle. Rolling means constrain them to turn at a one to one ratio with respect to each other. Arms of said element reach through openings provided on said part and are connected on the opposite side of said part, so that the element may be journaled on both sides of said part.

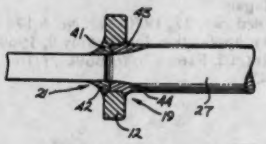
In a planetary transmission a pair of equal stationary bevel gears straddle and mesh with a pair of equal gears rigid with

said part. Each gear of said part has preferably one tooth more than its mate. The part is a single planet capable of ap-



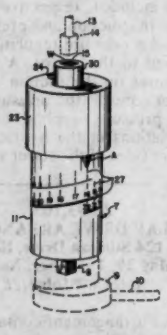
plying driving load in diametrically opposite regions, with minimum bearing loads.

3,595,104
KNIFE CONSTRUCTION
John N. Cooper, 2200 Burbank Blvd., Burbank, Calif.
Division of Ser. No. 682,470, Nov. 13, 1967, Pat. No. 3,481,038
Filed Nov. 20, 1969, Ser. No. 877,550
Int. Cl. B21k *11/00*
U.S. Cl. 76—104 **5 Claims**



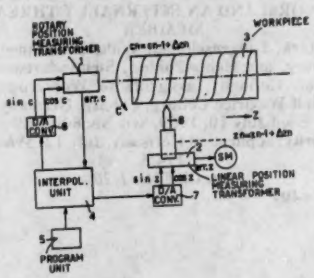
The knife construction disclosed herein includes a blade, handle tang and hilt composed of different materials which are fusibly joined along their common surfaces employing selected brazing materials and selected brazing and tempering temperatures to produce a nonporous fusion joint of high strength and prolonged longevity.

3,595,105
TORQUE MEASURING TOOL UNIT
Theodore R. Wagner, 257 Lansing St., Aurora, Colo.
Filed Dec. 5, 1968, Ser. No. 781,396
Int. Cl. B25b
U.S. Cl. 81—52.4 **12 Claims**



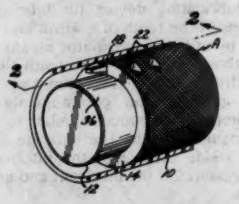
In this torque measuring tool unit, a plurality of drive transmitting balls are spaced circumferentially in coplanar relationship around the common axis of two driving and driven housing sections, the balls being in one of said housing sections and pressed by individual coiled compression springs releasably into registering recesses of uniform size and depth provided in the other of said housing sections. A screw element threaded in one of the housing sections relative to the other provides an adjustable backing for the springs, and when this screw is tightened it enables the balls to transmit higher torque, and vice versa. A detent and pointer turn with the screw relative to graduations on the housing to hold the screw in a set position and indicate the torque setting. The torque measuring tool unit is connected between a driving unit and a tool such as a screw driver or wrench to protect the work against overtightening of a screw of nut and prevent stripping of threads.

3,595,106
DIGITAL POSITION CONTROL DEVICE FOR APPARATUS SUCH AS MACHINE-TOOLS HAVING A ROTATABLE MEMBER
Piero Pomella, and Luciano Lauro, both of Ivrea, Turin, Italy, assignors to Ing C. Olivett & C., S.p.A., Ivrea, Turin, Italy
Filed Sept. 16, 1968, Ser. No. 760,012
Claims priority, application Italy, Sept. 16, 1967, 53044-A/67
Int. Cl. B23b *3/00, 1/00*
U.S. Cl. 82—1 **6 Claims**



A numerical control device for machine-tool operation in which a tool or workpiece, or both, must be both translated linearally and rotated. The two motions are correlated as necessary, for instance, to cut a screw thread.

3,595,107
PLASTIC PIPE TAPERING DEVICE
Stephen Dackow, 808 E. Ocean Front, Balboa, Calif.
Filed Nov. 5, 1969, Ser. No. 870,583
Int. Cl. B23b *5/16*
U.S. Cl. 82—4 C **10 Claims**



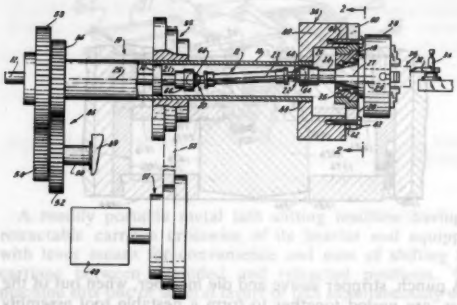
A rotary tool for concurrently forming a circumferential taper of desired angulation on an end portion of a length of plastic pipe and facing the end extremity of said portion to be normal to the longitudinal axis of the pipe.

3,595,108

APPARATUS FOR IMPARTING A NON-CIRCULAR SHAPE TO AN ARTICLE

Istvan Priscsak, New Milford, Conn., assignor to Benrus Corporation, Ridgefield, Conn.

Filed June 16, 1969, Ser. No. 833,337
Int. Cl. B23b 5/44
U.S. Cl. 82—18 15 Claims



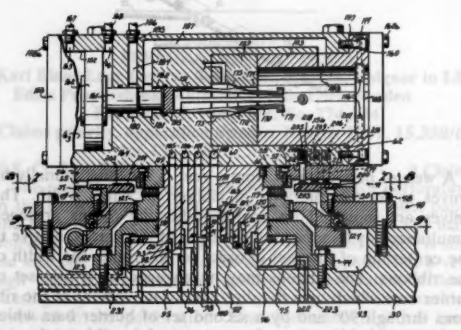
Apparatus for rotating an article relative to a cutting means, characterized by a flexible inner shaft which is rotatable within an outer shaft and connected thereto in a manner which is effective to superimpose the rotation of the outer shaft on the inner shaft. The inner shaft is flexed to a position at which its axis of rotation is eccentrically located relative to the axis of rotation of the outer shaft. Means are provided to rotate the shafts at different speed simultaneously, and the article, which is held in a chuck at the end of the inner shaft, is therefore turned at one rotative speed and eccentrically moved at a different rotative speed. Thus, when this article contacts a cutting tool, a noncircular shape is imparted thereto, the shape being varied by changing the respective speeds of the shaft and/or the degree of eccentricity of the inner shaft with respect to the outer shaft.

3,595,109

TOOL TURRET

Robert K. Burroughs, Batavia, and Timothy A. Wakefield, Cincinnati, both of, Ohio, assignors to The R. K. LeBlond Machine Tool Co., Cincinnati, Ohio

Division of Ser. No. 631,991, Apr. 19, 1967, Pat. No. 3,513,734
Filed Jan. 7, 1970, Ser. No. 1,176
Int. Cl. B23b 3/36
U.S. Cl. 82—34 6 Claims



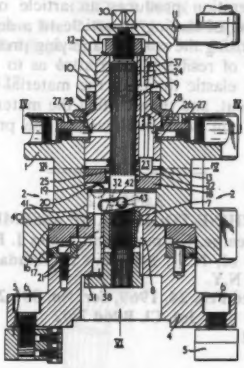
An indexable tool turret for use in a machine tool having an automatic tool changer. The turret has two tool stations, both of which have a motor operated clamp for securing a tool in the station with a locating surface of the tool clamped against a locating surface of the turret. Each station has a plurality of air jets directed at the tool when it is inserted into the station so that dirt and debris are blown clear of the tool and particularly its locating surfaces automatically as the tool is inserted into the station. Indexing of the turret is effected by lifting the tool turret clear of a gear coupling and rotating the turret to a new index position after which it is lowered to reengage the gear coupling. A hydraulic motor raises and lowers the turret and functions as a relatively friction free hydraulic thrust bearing to support the turret in the raised position while it is indexed.

3,595,110

INDEXIBLE TURRET FOR A MACHINE TOOL

Walter E. Topliss, Belgrave; Frederick Ellard, Thurmaston, and David A. Harlow, Wigston Magna, all of, England, assignors to Alfred Herbert Limited, Foleshill Coventry, Warwickshire, England

Filed June 20, 1969, Ser. No. 835,020
Claims priority, application Great Britain, Oct. 16, 1968, 49,030/68
Int. Cl. B23b 29/28
U.S. Cl. 82—36 A 6 Claims

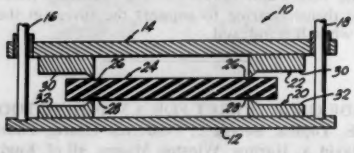


A machine tool turret of the kind comprising a toolholder, a soleplate, an axially engageable coupling acting between the toolholder and the soleplate to locate the toolholder in an indexed position with respect to the soleplate, an indexing ring for effecting indexing of the toolholder from one indexed position to another, a cam turned by the indexing ring for effecting separation of said coupling to effect indexing of the toolholder and a shaft for turning the indexing ring. The turret also includes a nut engaged by said shaft and constrained to move axially thereon relatively to the soleplate on turning of the shaft, initial turning of the shaft in one direction moving said shaft axially of the nut to unclamp the toolholder by effecting separation of the indexing ring from engagement with a supporting surface therefor on the toolholder and continued turning of the shaft in said one direction effecting turning of the indexing ring, without further axial movement of the shaft, the nut instead of the shaft moving axially of the soleplate, axial separation of said coupling then occurring, followed, after indexing of the toolholder, to said other indexed position, by reengagement of said coupling and turning of the shaft in said other direction effecting axial movement of said nut followed finally by axial movement of the shaft and the indexing ring to reclamp the toolholder by reengaging the indexing ring with said supporting surface on the toolholder.

3,595,111
METHOD AND APPARATUS FOR FORMING WORKPIECES

Welcome D. Hershberger, 16135 Petro Drive, Mishawaka, Ind.

Filed Mar. 5, 1969, Ser. No. 804,556
Int. Cl. B26d 7/08
U.S. Cl. 83—19 10 Claims

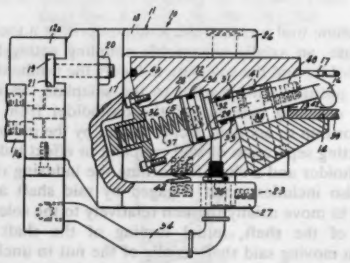


Apparatus for cutting foam rubber and the like to a desired shape from a blank of foam rubber material. The apparatus includes a punch and die set which has complementary cutting edges adapted to abut against each other when the set is closed, and complementary lands on one side of each cutting edge in spaced relation when the set is closed for engaging and compressing the blank as an incident to closing the set, thereby causing controlled internal flow of the material immediately prior to the material being cut so that the cutting operation produces an article of the desired shape. A method of cutting an article to a desired shape is disclosed comprising the steps of applying pressure to a portion of a blank of resilient material so as to cause internal flow within the elastic limits of the material across the intended path of cut, and then cutting the material on said intended path of cut while maintaining the pressure on the blank.

3,595,112
MACHINE-TOOL CLAMP ASSEMBLY

Robert P. De George, Kenmore, and James J. Pancook, Tonawanda, both of, N.Y., assignors to Houdaille Industries, Inc., Buffalo, N.Y.

Filed Feb. 24, 1969, Ser. No. 801,280
Int. Cl. B26d 7/02
U.S. Cl. 83—62 11 Claims

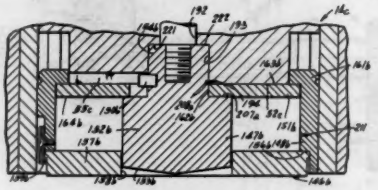


A machine tool has a workpiece positioning mechanism including a carrier which is reciprocated in one axis to position the workpiece which is held by a clamp assembly. The clamp assembly is mounted on the carrier to be free to move vertically and has a resiliently yieldable bumper responsive to any obstruction. The clamp assembly includes a clamp member which moves in a direction which is inclined to the horizontal for drawing the workpiece against a locating surface on the clamp assembly. Both the actuator and the clamp member move in a direction which is inclined to the horizontal.

3,595,113
PUNCH PRESS TOOLING

John H. Herzog, Red Wing, Minn., and Ronald C. Hill, Corfu, N.Y., assignors to Houdaille Industries, Inc., Buffalo, N.Y.

Division of Ser. No. 714,957, Mar. 21, 1968, Pat. No. 3,548,700
Filed July 9, 1970, Ser. No. 53,487
Int. Cl. B26d 7/18
U.S. Cl. 83—136 5 Claims

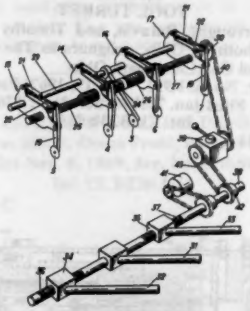


A punch, stripper sleeve and die member, when out of the press, are nested together to form a nestable tool assembly which can be rapidly handled as a unit and inserted and removed from a punch holder and drive assembly of a punch press.

3,595,114
WEB SLITTING APPARATUS

Howard Osborn, Aylesbury, and Charles Samuel George Trill, Bledlow, both of, England, assignors to Wiggins Teape Research & Development, Limited, London, England

Filed June 4, 1969, Ser. No. 830,346
Claims priority, application Great Britain, June 7, 1968, 27293/68
Int. Cl. B65h 35/02
U.S. Cl. 83—158 12 Claims



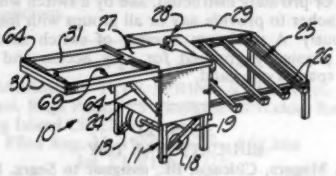
A web of paper drawn from a reel is slit longitudinally by knives to form a plurality of ribbons of equal width. The knives are mounted on position-adjusting means arranged simultaneously to adjust the positions of the knives relative to the centerline of the reel in order to determine the width of the ribbons. The ribbons may be engaged by a first set of turner bars which turn the direction of movement of the ribbons through 90° and by a second set of burner bars which again turns the direction of movement of the ribbons through 90° to superimpose them one over the other. Ribbons may be slit from webs drawn separately from two reels and by the turner bars be superimposed one over the other.

3,595,115

PORTABLE LATH SLITTING MACHINES

Norman A. Pelletier, La Puente, Calif., assignor to Dimco

Filed Apr. 30, 1969, Ser. No. 820,598
Int. Cl. B26d 7/06; B23d 19/04
U.S. Cl. 83—165 13 Claims



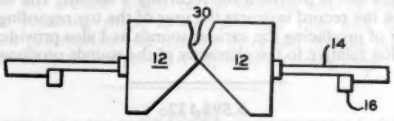
A readily portable metal lath slitting machine having a retractable carriage crosswise of its heavier end equipped with lever means for convenience and ease of shifting the carriage between extended and retracted positions. The machine slits one or several layers of lath simultaneously with ease. Extendable work-supporting tables provide ample space for accommodating large sheets of stock material and fold compactly against the machine into a size permitting the machine to be rolled by one man through normal-size doors and into a conventional passenger elevator.

3,595,116

SEVERING BLADE WITH BEVELED GRIPPING EDGE

Dixie E. Gilbert, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed Aug. 18, 1969, Ser. No. 850,802
Int. Cl. B26d 7/02, 7/08
U.S. Cl. 83—176 8 Claims



Square cuts are obtained in thermoplastic tubing and the like by means of closing cooperating gripping jaws on the tubing, which jaws have a leading cutting edge and an offset gripping edge which slopes back to an outer surface of the blade.

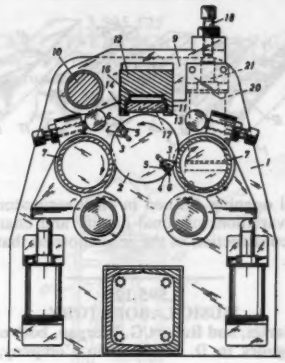
3,595,117

PERFORATION MACHINES

Karl Einar Lage Grettve, Lilla Edet, Sweden, assignor to Lilla Edets Pappersbruks Aktiebolag, Lilla Edet, Sweden

Filed Nov. 8, 1968, Ser. No. 774,234
Claims priority, application Sweden, Nov. 9, 1967, 15,358/67
Int. Cl. B26d 1/56; B26f 1/20
U.S. Cl. 83—349 2 Claims

The present invention relates to a machine for perforating, in the transverse direction, paper webs, such as toilet paper and household paper, and webs of similar material. The main object of the invention is to provide a machine which is simple and safe in its construction and which operates at a very high accuracy and further ensures a perforation without causing any noticeable wearing of the parts of the machine involved in the perforation. The object aimed at has been achieved by shaping the abutment means of a longitudinal border reaching into the movement path of the knifes and outside the periphery of the roller, and an elongated pad extending parallel to the roller axis, said pad at the side turned towards the roller provided with abutment and sliding surfaces, for the knife which are extending in the transverse direction of the pad, said surface arranged with some



distance from each other and adapted to rebound when being hit by the knife.

3,595,118

GUITAR PICK

Ande Dale Paxton, Rte. 2, Box 271, Yakima, Wash.

Filed Sept. 8, 1969, Ser. No. 855,859
Int. Cl. G10d 3/16
U.S. Cl. 84—322 4 Claims

A pick made of thin, flat, stiff but springy plastic sheet material which is gripped between thumb and forefinger when picking or strumming the strings of a guitar. A noncircular aperture is located adjacent the butt end of the pick and acts as a female spline to resist rotation of the pick between the thumb and finger gripping the same. A slit or slot in the clip provides access to said aperture for admitting a guitar string thereto and thus attach the pick to the instrument and prevent separation of the pick and the instrument when the latter is not being used. The invention also provides means for storing a reserve supply of several picks right on the guitar in a manner which does not interfere with playing the latter.

3,595,119

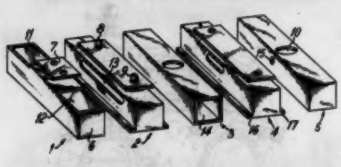
XYLOPHONE-LIKE SOUND PRODUCING UNIT

Leendert Hendrik Kuijpers, Albertus Perkstraat 16, Hilversum, Netherlands

Filed July 25, 1969, Ser. No. 844,786
Int. Cl. G10d 13/08
U.S. Cl. 84—403 7 Claims

A sound producing unit comprises a plurality of resonator members of equal size arranged in a row to form an

xylophonelike musical instrument. Each resonator member has a contact opening and over the contact opening of each resonator there is positioned a sound bar of a size chosen to produce a distinctive note or tone. The construction includes

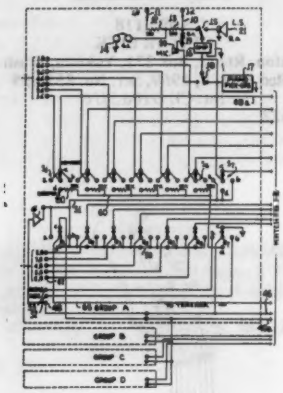


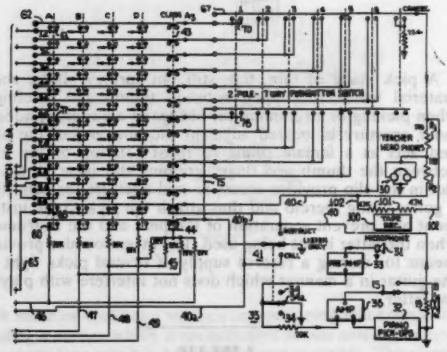
an additional opening defined in each resonator member to provide for variations of tonal quality and character and it permits the construction of the resonators so that they are all of equal size.

3,595,120
MUSIC LABORATORY

Daniel W. Martin, and Robert G. Morgan, both of Cincinnati, Ohio, assignors to D. H. Baldwin Company, Cincinnati, Ohio

Filed Apr. 5, 1968, Ser. No. 719,126
Int. Cl. G09b *15/08*
U.S. Cl. 84—470 **42 Claims**





A system of class intercommunication which provides:
(1) individual channels between a teacher and
(a) any student of the class, or
(b) any of several preselected groups of students of the class, or
(c) the entire class.
(2) provision for ensemble playing within one or more of the groups.
(3) provision for group instruction from audio aids, all under control of the teacher only.

Programming is achieved by rotary group programming switches, which determine the character of the facilities, e.g., individual, audio aids, and ensemble, by interlocked group selection switches which enable selection of one group to the exclusion of the others, by further interlocked selection switches which enable selection of an individual student to be monitored or privately instructed, and by a switch which enables the teacher to provide any or all groups with instruction simultaneously. A minimum number of switch actuators is provided, physically grouped for easy access and control within the span of one hand.

3,595,121
EDUCATIONAL TOY

Ronald G. Magers, Chicago, Ill., assignor to Sears, Roebuck and Co., Chicago, Ill.

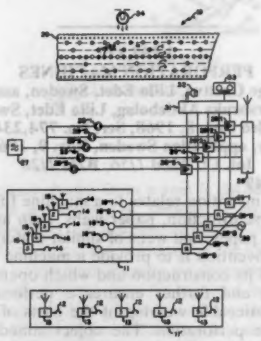
Filed Sept. 16, 1969, Ser. No. 858,293
Int. Cl. G09b *15/00*
U.S. Cl. 84—470 **6 Claims**

An educational toy construction comprising a body portion supporting a plurality of different sound producing elements. An opening is defined in the interior of the body portion, and an access slot is provided for receiving a record. The sound track on the record instructs the user of the toy regarding the manner of producing the various sounds and also provides information relative to the character of the sounds produced.

3,595,122
PROGRAMMED SYSTEM FOR COMPLEX POLYTEMPI MUSIC AND BALLET PERFORMANCES

Mihai Brediceanu, 1019 James St., Syracuse, N.Y.

Filed June 15, 1970, Ser. No. 46,169
Int. Cl. G04f *5/02*; G04b *19/00*
U.S. Cl. 84—484 **3 Claims**



A programmed system for polytempi music and dance has a mechanically operated timer with means for operating a

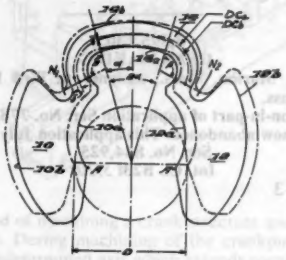
group of electrical circuits to produce audio and visual signals at a preselected tempo for each circuit. Each circuit is connected to transmit an audio signal including a radio signal at the selected tempo, and a visual signal at the same tempo at a signal light in the orchestra. Each musician has a headphone to receive the audio signal for his group in the orchestra and each dancer has a miniaturized radio receiver and earphone to receive the radio signal for his group of dancers. A command system may also be provided to transmit verbal signals to a selected group or all of the groups of dancers and musicians.

3,595,123

RADIAL ASSEMBLY-TYPE SPRING RETAINING RINGS

Hugo Wurzel, Rego Park, N.Y., assignor to Waldes Kohinoor, Inc., Long Island City, N.Y.

Filed Aug. 25, 1969, Ser. No. 852,866
Int. Cl. F16b *21/18*
U.S. Cl. 85—8.8 **5 Claims**



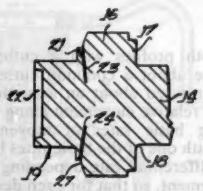
A clip-type retaining ring designed for radial assembly in the groove of a shaft or the like comprising diametrically opposed ring segments or jaws connected by a flexible bending arm having substantially increased arcuate length as compared to the arcuate length of the bending arm of known clip-type retaining rings, as endows said ring with large deflection possibilities and thereby increased holding power as compared to that of prior art clip-type retaining rings.

3,595,124

CONTROLLED TORQUE BOLT

Robert O. Lindstrand, Rockford; Gehle D. Loomis, Rockford, and Rudolph C. Kozlik, Roscoe, all of, Ill., assignors to Keystone Consolidated Industries, Inc., Peoria, Ill.

Filed May 19, 1969, Ser. No. 825,771
Int. Cl. F16b *31/02*
U.S. Cl. 85—61 **7 Claims**



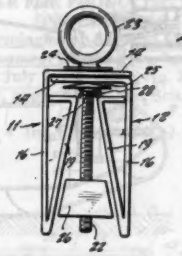
A controlled torque bolt having a threaded shank and a driving head integral with and adapted to shear off of the bolt upon the application of a predetermined torque by a driver upon the driving head. The bolt also includes an enlarged flange or head forming the head of the bolt when secured in the work, the driving head and the enlarged head being integral with the bolt and defined by a fold or undercut therebetween which also defines the plane of shear for the driving head. An alternate embodiment of the bolt positions a washer in the fold or undercut.

3,595,125

PICK-UP STAKE-POCKET TIE RING

Charles H. Jacobs, 712 Willsie Avenue, Rapid City, S. Dak.

Filed June 30, 1969, Ser. No. 837,524
Int. Cl. F16b *13/06*
U.S. Cl. 85—76 **2 Claims**



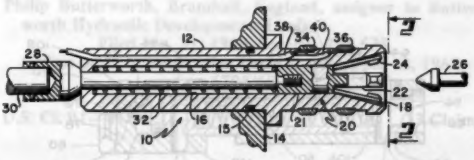
A tiedown for use on a pickup truck, the device comprising a pair of metal straps that are each bent into a triangular shape with one leg extended and having a slot therethrough, the straps being positioned together with the slotted legs placed one over the other so that a threaded shank of an eye bolt is fitted through the slots, the shank having a wedge screwed upon it which thus bears pressure on one side of each of the triangular shapes.

3,595,126

FUZE INITIATOR

David C. Norton, Fort Walton Beach, Fla., assignor to Avco Corporation, Richmond, Ind.

Filed Aug. 14, 1969, Ser. No. 849,993
Int. Cl. F41f *5/02*; B64d *1/04*
U.S. Cl. 89—1.5 D **7 Claims**



A fuze initiator is disclosed for initiating a fuze based upon the principle that an initiating force can be transmitted to a gripping element which will respond to the force similarly to a human hand reaction. The initiator includes biased open individual gripping members mounted for slidable movement in a divergent bore portion of a housing. The gripping members close about a fuze engagement shaft in response to movement of the gripping members from the divergent portion to a straight bore portion.

3,595,127

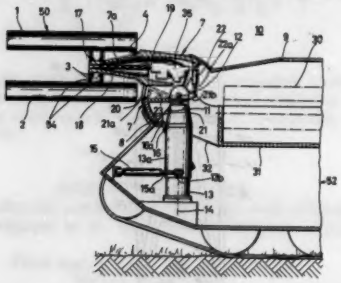
DEVICE FOR LAUNCHING FLYING BODIES

Arnold Stangl, Munich, and Franz Pfister, Hochstadt, both of, Germany, assignors to Bolkow Gesellschaft mit Beschranktec Haftung, Ottobrunn near Munich, Germany

Filed July 26, 1965, Ser. No. 475,627
Int. Cl. F41f *23/00*
U.S. Cl. 89—1.815 **10 Claims**

1. A device for launching flying bodies particularly reaction-driven missiles, comprising a substantially ball-shaped

pivot member, means pivotally mounting said pivot member for pivotal movement about a first normally horizontal axis and about a second normally vertical axis, at least one first and one second flying body launching tube rotatably mounted on said pivot member, control means operatively connected to said pivotal mounting means for said pivot member for pivoting said pivot member about said first and second axes, said pivot member having a loading opening

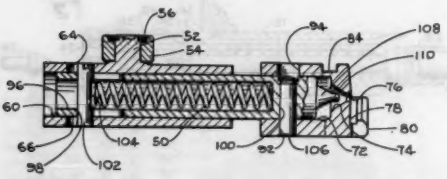


defined therethrough below the pivotal mounting of said launching tubes thereon, said first and second launching tubes being rotatable between a firing position at which one of said first and second launching tubes extends above said ball member and a loading position at which one of said first and second loading tubes extends in alignment with the loading opening defined in said ball member, and a closure flap carried by said ball member and movable between a position closing said opening and a position opening said opening.

3,595,128
BOLT ASSEMBLY

John P. Hoyt, Jr., Burlington, Vt., assignor to General Electric Company

Filed Oct. 22, 1969, Ser. No. 868,380
Int. Cl. F41d 7/02
U.S. Cl. 89—12 **9 Claims**



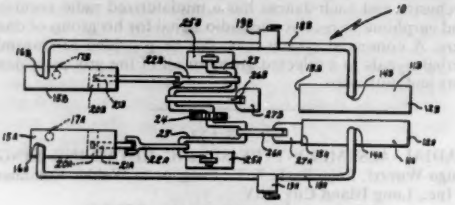
A bolt assembly for a Gatling gun, which gun has a stationary housing with the conventional elliptical cam track; a rotor assembly and a plurality of barrels, adapted to receive a like plurality of said bolt assemblies; includes means for cocking, searing and resetting the firing pin responsive to the longitudinal disposition of the bolt.

3,595,129
VARIABLE RATE SINUSOIDAL ACTION MACHINE GUN

Jack N. Bender, 3089 A Concord, Hill AFB, Utah, and Raymond Lashley, Box 88, Rte. 1, Hooper, Utah

Filed Nov. 5, 1969, Ser. No. 874,195
Int. Cl. F41d 5/08, 5/10
U.S. Cl. 89—130 **1 Claim**

A machine gun in which controlled chamber pressure and weapon recoil, through suitable linkages, connections, and controls, turn a crankshaft to which the breechblock is connected. As a result, the breechblock moves sinusoidally, thereby permitting gentle handling of ammunition, higher firing rates, and positive firing rate control, from very low to

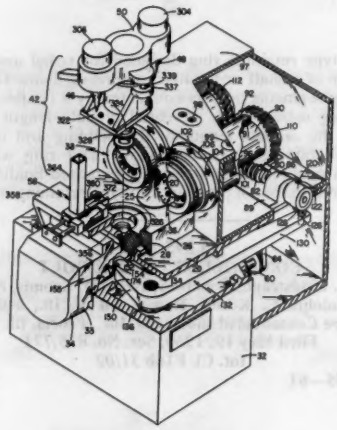


very high rates. The machine gun has at least one barrel, with a breechblock for each barrel.

3,595,130
GEAR MAKING

Paul Maker, Marion, Mass., assignor to Bird Island, Inc., Boston, Mass.

Continuation-in-part of application Ser. No. 778,579, Nov. 25, 1968, now abandoned. This application July 25, 1969, Ser. No. 844,925
Int. Cl. B23f 5/20
U.S. Cl. 90—3 **32 Claims**



Generating tooth profiles with a cutter having cutting edges which move about a common cutter axis, the workpiece also being rotated about an axis, the workpiece and cutter undergoing relative movement along a path, cutter and workpiece having basic rates of movement about their respective axes, with one of the basic rates being increased or decreased by a differential rate depending upon the rate of said relative movement, so that for each desired tooth profile the cutting edges will make a series of cuts tangent to the desired profile at a succession of lines, the basic rates of movement of the cutting edges and the workpiece about their respective axes having a ratio dependent on the ratio of the number of teeth in the gear to the number of cutting edges so that each edge will make a cut tangent to a desired profile as the latter passes across the path of movement of the respective cutting edge and so that between successive cuts tangent to any one desired profile there intervenes complete revolution of the workpiece.

3,595,131

METHOD OF MACHINING CRANK STRUCTURES

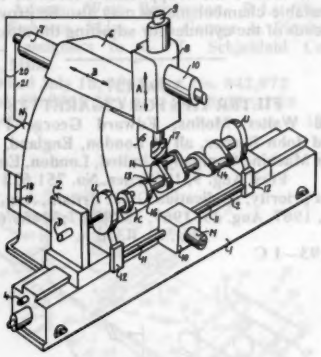
Frantisek Rozanek; Oldrich Brabec; Jaroslav Chmelik; Miroslav Malek; Lubomir Kres, and Ivan Kraus, all of Plzen, Czechoslovakia, assignors to SKODA oborovy podnik, Plzen, Czechoslovakia

Continuation-in-part of application Ser. No. 700,173, Jan. 24, 1968, now abandoned. This application Jan. 27, 1969, Ser. No. 794,182

Claims priority, application Czechoslovakia, Jan. 24, 1967, 537-67

Int. Cl. B23c *1/18*

U.S. Cl. 90—13.9 **9 Claims**



A method of machining a crank structure and in particular a crankpin. During machining of the crankpin it is rotated about a predetermined axis which extends parallel to the axis of the crankpin. A milling cutter is maintained in engagement with the crankpin and rotated synchronously therewith, and the milling cutter is simultaneously rotated about its own axis so as to effect the cutting operations while the milling cutter turns simultaneously and synchronously with the crankpin. The axis of the milling cutter extends perpendicularly to the axis of the crankpin and is initially displaced beyond the crankpin axis during a rough cutting operation where a cutting end face of the milling cutter engages the crankpin, this end face being situated in a plane perpendicular to the axis of the milling cutter. During a finish cutting operation the axis of the milling cutter is displaced so as to perpendicularly intersect the axis of the crankpin, and the milling cutter and crankpin are again turned synchronously through the circular paths.

3,595,132

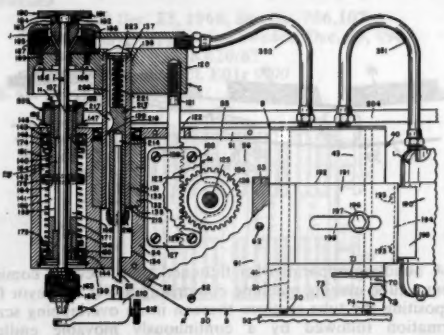
DEPTH-CONTROLLED DRILL PRESSES

Ralph S. Thacker, 4434 Los Feliz Blvd., Los Angeles, Calif.

Filed May 12, 1969, Ser. No. 823,773

Int. Cl. B23c *1/06*; B23b *47/20*

U.S. Cl. 90—14 **12 Claims**



A depth-controlled drill press having a supporting means including a head slidably mounted in the body of said supporting means and manually movable toward and from a work rest carried by the body, a quill rotatably mounted in said body and held from axial movement, a motor rotating said quill, a tool supporting spindle received within said quill guided for axial movement and restrained from rotation relative to the quill. The upper end of the spindle is held attached to said head by an electromagnet and pushed away from the work by a spring when the electromagnet is deenergized by circuitry actuated upon the tool engaging a metallic member in the work.

3,595,133

TRANSDUCER FOR PRODUCING MECHANICAL OSCILLATIONS

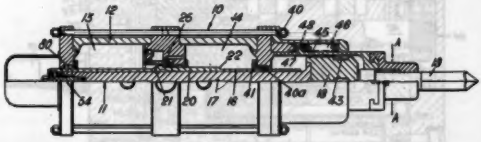
Keith Foster, Birmingham, England, assignor to National Research Development Corporation, London, England

Filed July 1, 1969, Ser. No. 838,237

Claims priority, application Great Britain, July 2, 1968, 31606/68

Int. Cl. F15b *15/22*

U.S. Cl. 91—390 **16 Claims**



A transducer for converting fluid pressure oscillations into mechanical oscillations usable as a rock breaking tool comprises a differential area piston sliding in a cylinder having two chambers therein. One chamber is connected to the oscillating pressure fluid source, and a valve arrangement including a fluid storage space ensures that the pressure in the storage space is greater than the algebraic mean pressure in the first chamber. A position control valve prevents slow drift or rapid excessive movements of the piston.

3,595,134

RECIPROCATORY MOTORS

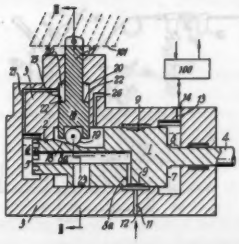
Philip Butterworth, Bramhall, England, assignor to Butterworth Hydraulic Developments Limited

Filed Jan. 31, 1969, Ser. No. 795,535

Claims priority, application Great Britain, Feb. 12, 1968, 6795/68

Int. Cl. F15b *15/17*; F01b *7/18, 9/00*

U.S. Cl. 91—417 **13 Claims**



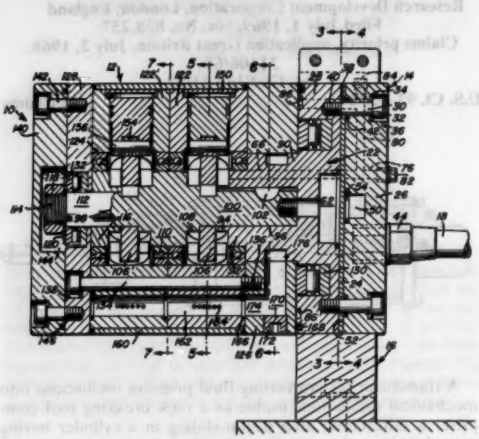
A reciprocatory fluid pressure operated motor in which a piston having a cam profile on its peripheral surface is axially reciprocated in a piston cylinder and a spool with its axis disposed radially with respect to the piston axis is biased through its spool cylinder to abut the piston and ride over the cam profile during axial reciprocation of the piston by which

movement is imparted to the spool along its axis, and in which thrust means, preferably in the form of hydrostatic pads, is provided between the piston and its cylinder to oppose the radially directed force applied on the piston through the spool from the biasing means associated with the spool and maintain the piston in balance.

3,595,135
FLUID OPERATED POWER DEVICE

Clifford T. Deane, South Charleston, W. Va., assignor to Stampco, Inc.

Filed Oct. 17, 1969, Ser. No. 867,264
Int. Cl. F01b *1/06, 13/06, 31/10*
U.S. Cl. 91—492 15 Claims

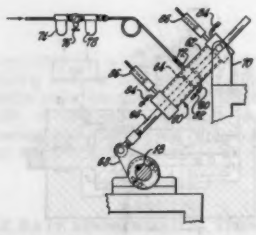


One or more cylinder blocks slidably mounting radially reciprocable pistons are rotatably mounted in assembled relation with a valve block on a stationary valve spindle and cam assembly. Fluid is conducted between the radial chambers in the cylinder blocks and the ports in a manifold plate through passages formed in the valve block and spindle.

3,595,136
METHOD AND APPARATUS FOR REDUCING TORQUE CHANGES IN ROCK SHAFTS

Richard E. Pitt, Newark, Ohio, assignor to Owens-Corning Fiberglas Corporation

Filed May 2, 1969, Ser. No. 821,259
Int. Cl. F01b *31/04*
U.S. Cl. 92—143 9 Claims

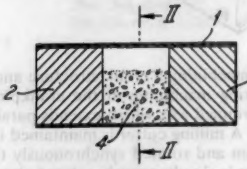


A pneumatic cylinder connected between an eccentric on a rock shaft and a structural support, for absorbing energy during one quarter of the cycle of the rock shaft during which it is decelerated, and for putting the absorbed energy back into the rock shaft during the next quarter cycle when it is accelerated. The pneumatic cylinder is preferably a double-acting one with a center port to accomplish the energy absorption and redelivery to the rock shaft, at both ends of the shaft rocking movement. The rate of energy absorption and subsequent reapplication may be controlled by supplying superatmospheric pressure to the center port, and/or by starting the compressive cycle prior to the midpoint of the oscillating cycle. The later is accomplished by using a piston—side port valving arrangement wherein the piston has a length that is a sizable proportion of its stroke. The cylinder may be cooled by utilizing a center exhaust port opposite the inlet port, and causing a continual flow through the low pressure end of the cylinder after the piston has proceeded past the inlet port. Bleeds may be provided at opposite ends of the cylinder to reduce the reapplication force of the cylinder, and adjustable chamber means may also be provided on one or both ends of the cylinder for adjusting the absorption rate.

3,595,137
FILTER TIPS FOR CIGARETTES

Desmond Walter Molins; Edward George Preston, and Donald John Barber, all of London, England, assignors to Molins Machine Company Limited, London, England

Filed Aug. 9, 1968, Ser. No. 751,622
Claims priority, application Great Britain, Aug. 18, 1967, Aug. 29, 1967, Aug. 29, 1967, 38293/67;39456/67;39457/67
Int. Cl. B31d
U.S. Cl. 93—1 C 9 Claims

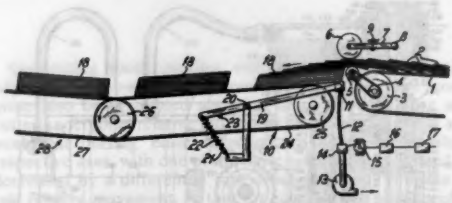


The manufacture of cigarette filters containing a particulate filtering material in a compartment in which beads of polystyrene are expanded within the compartment to take up excess space in it and prevent smoke bypassing the filtering material.

3,595,138
BUNDLING APPARATUS FOR FLATTENED TUBE SECTIONS COMING FROM A TUBE-MAKING MACHINE

Friedrich Franz Brockmuller, and Gustav Kuckhermann, both of Lengerich Westphalia, Germany, assignors to Windmoller & Holscher, Lengerich, Westphalia, Germany

Filed Dec. 23, 1969, Ser. No. 887,513
Claims priority, application Germany, Dec. 24, 1968, P 18 16 976.1
Int. Cl. B65h *33/00*
U.S. Cl. 93—93 DP 10 Claims



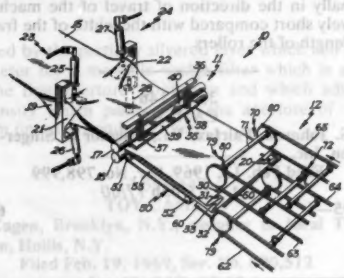
A bundling apparatus for flattened tube sections coming from a tube making machine comprising a first conveyor for depositing the tube sections thereon in an overlapping scale formation followed by a continuously movable endless second conveyor for bundling the tube sections. The first conveyor is passed over a direction changing roller at the delivery end of the first conveyor adjacent a receiving end of

the second conveyor. A' suction beam is disposed between the delivery end of the first conveyor and the receiving end of the second conveyor with the suction beam being adapted to have its suction effect interrupted after a bundle of a predetermined number of tube sections has been formed. A rotatable supporting roller for the tube sections having a smaller radius than the direction changing roller is positioned parallel to the direction of the changing roller and is disposed between the suction beam and the delivery end of the first conveyor.

3,595,139
APPARATUS FOR NESTING BAGS

Richard C. Adams, West Barrington, R.I.; Thomas J. Monahan, Swansea, Mass., and George A. Picotte, Johnston, R.I., assignors to G. T. Schjeldahl Company, Northfield, Minn.

Filed July 18, 1969, Ser. No. 842,972
Int. Cl. B31b *29/14, 45/00*; B65b *43/26*
U.S. Cl. 93—33 **14 Claims**

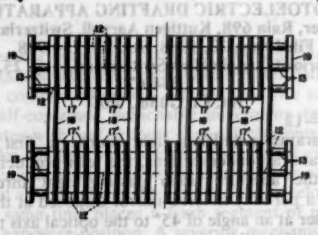


Apparatus for loading a series of bags onto a mandrel in nested relationship with each bag in the series being disposed inside of its next succeeding neighbor in the series, the apparatus handling the bags accomplishing the operation with both positive loading and positive release, with the release being accomplished at substantially the same point in each cycle. The apparatus includes a delivery means such as a first conveyor which delivers the individual bags to be loaded in series relationship onto a second conveyor. The second conveyor has a plurality of pickup means for releasably engaging the surface of each bag, and thereafter transporting these engaged bags in stable disposition to a predetermined discharge point. The second conveyor means is provided with means to open the bag relatively widely so as to permit the bottom of the next preceding bag to be received within the walls of the widely opened top.

3,595,140
SUPPORTING OR PROTECTING MAT

Curt Fredrik Lundin, P.O. Box 45, 182 51, Djursholm, 1, Sweden

Filed Dec. 23, 1968, Ser. No. 786,107
Claims priority, application Sweden, Dec. 29, 1967, 18,020/67
Int. Cl. E01c *9/00*
U.S. Cl. 94—4 **12 Claims**

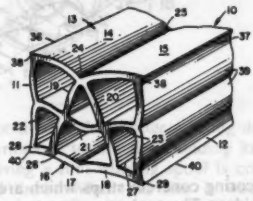


A load supporting or structural protection mat assembled from a group of heavy duty elongate tubular members placed parallel and joined by ropes extending normally through the adjacent tubular members from one end to the others enabling the mat to be rolled if desired. The lengths and the arrangement of different length tubular members can be varied for weight reduction, and the tubular members can be made from metal or plastic. Fins, nails and embedded granular material can be incorporated in and on the tubular members. End members of the mat can be made as handles or, made with special shapes will enable end to end attachment of individual mats. Such mats are contemplated as bridge beds, roadways, runways or other reinforcement surface over the ground.

3,595,141
PAVEMENT AND BRIDGE JOINT SEALS

Donald R. Boney, North Baltimore, and Frank Kenneth Hall, Findlay, both of, Ohio, assignors to The D. S. Brown Company, North Baltimore, Ohio

Filed Dec. 26, 1968, Ser. No. 786,889
Int. Cl. E01c *11/10*
U.S. Cl. 94—18 **9 Claims**

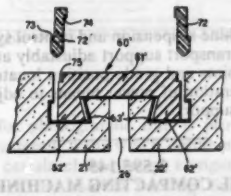


Elongated, hollow elastomer seals particularly useful for the sealing of concrete pavement joints, bridge deck joints, etc. against intrusion by liquids and incompressible solids and embodying bottom wall; substantially flat, elongated sidewalls; and an internal, thrust structure or network having elongated, downwardly diverging webs in the transversely median portion of the network and diverging from an apex at or below the longitudinal midportion of the top wall and one or more pairs of elongated, transversely laterally extending webs extending between the diverging webs and respective sidewalls.

3,595,142
EXPANSION RUBBER JOINT FOR ROADS AND BRIDGES

Carlo Via, Milan, Italy, assignor to Societa Applicazioni Gomma Antivibranti SAGA S.p.A., Milan, Italy

Filed Oct. 2, 1969, Ser. No. 863,100
Claims priority, application Italy, Mar. 12, 1969, 13976-A/69
Int. Cl. E01c *11/10*
U.S. Cl. 94—18 **9 Claims**



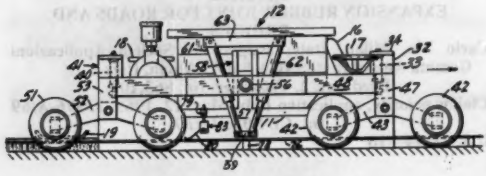
An expansion joint for road or bridge sections comprises a resilient strip straddling the gap between two adjacent sections, and beads along the edges of the strip running along the gap. The beads are received in the cavity of a channel,

and are wedged in the channel by a resilient wedge member which prestresses the joint to prevent puckering of the edges of the strip when it is under traction.

3,595,143
SCORING TOOL
Salvatore Polselli, 20 Chiara Drive, Harrisburg, Pa.
Filed Apr. 13, 1970, Ser. No. 27,586
Int. Cl. E01c *23/16*
U.S. Cl. 94—45 **10 Claims**

A tool for scoring concrete strips which are to be used as traffic lane dividers. The tool comprises two groups of teeth which are set in oppositely facing relation so that they cut oppositely facing reflective surfaces into the surface of the concrete. This enables the divider formed thereby to reflect the headlights of oncoming cars in both directions. Additionally the pattern of the teeth offer a distinctive sound pattern when the vehicle tires pass over them.

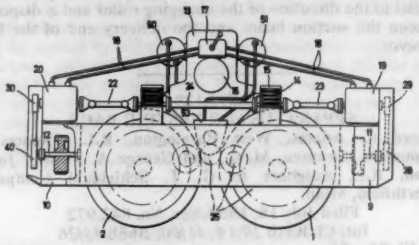
3,595,144
SUSPENSION AND LEVELING MECHANISM
Rink, Richard H., Huron, S. Dak., assignor to Huron Manufacturing Corporation, Huron, S. Dak.
Filed Aug. 14, 1968, Ser. No. 752,667
Int. Cl. E01c *19/48*
U.S. Cl. 94—46 **2 Claims**



A grading machine suspension and control system comprising a four-point transport support adjustably attached to said frame at three points and grade-position locators for manual or automatic operation of power means to adjust said frame on the transport support.

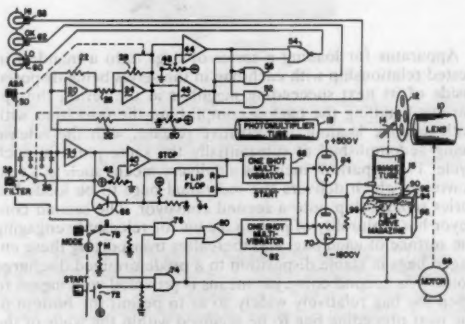
3,595,145
SOIL COMPACTING MACHINE
Joachim Mozdzanowski, Boppard (Rhine), Germany, assignor to Bopparder Maschinenbaugesellschaft mbH., (BOMAG), am Gueterbahnhof, Boppard (Rhine), Germany
Filed Aug. 26, 1969, Ser. No. 853,173
Claims priority, application Austria, Sept. 11, 1968, A 8850
Int. Cl. E01c *19/28*
U.S. Cl. 94—50 **12 Claims**

A soil compacting machine has a frame carrying two soil compacting rollers mounted in tandem and at least two out of balance centrifugal force generators for vibrating the rollers as they roll the soil. At least one of the generators is mounted on the frame in front of the rollers and at least one other generator is mounted on the frame behind the rollers



and both these generators are carried on shafts which extend longitudinally in the direction of travel of the machine and are relatively short compared with the width of the frame and the axial length of the rollers.

3,595,146
CAMERA
Quentin S. Johnson, Fairfax, Va., assignor to Singer-General Precision, Inc.
Filed Feb. 13, 1969, Ser. No. 798,999
Int. Cl. G03b *17/00*
U.S. Cl. 95—1 **6 Claims**

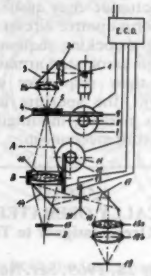


A high speed camera having a gated image intensifier tube in the optical path and having automatic exposure controls for gating the image tube according to the lighting conditions sensed by a photomultiplier tube which shares the optical image with the image tube. The image intensifier may amplify the image by a factor of 50,000 or more so that fast exposures may be made of extremely low-illuminated objects.

3,595,147
PHOTOELECTRIC DRAFTING APPARATUS
Karl Blattner, Rain 698, Kuttigen Aargall, Switzerland
Filed Aug. 23, 1968, Ser. No. 754,908
Claims priority, application Switzerland, Aug. 25, 1967, 12,054/67
Int. Cl. G03b *29/00*
U.S. Cl. 95—12 **4 Claims**

The apparatus includes a light source, a first aperture diaphragm and a condenser lens, the lens producing a real image of the aperture upon passing light through the diaphragm, a partially silvered mirror disposed at the rear of the condenser at an angle of 45° to the optical axis thereof to transmit part of the light beam emerging from the condenser lens and to reflect the remaining part of this light beam through an angle of 90°, a second aperture diaphragm to receive the reflected part of the light beam and for determin-

ing the thickness of the drawn stroke, a mirror and lens for forming an image of the second aperture on the photographic layer of a photoelectric cell to continuously measure the light intensity and disposed in the path of the light beam which is

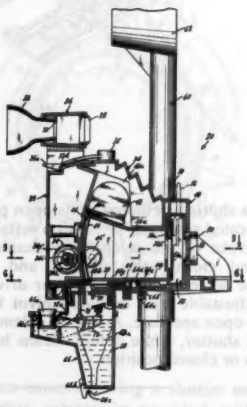


transmitted by the partially silvered layer which cell controls a servometer for a movable wedge filter which is arranged behind the first aperture diaphragm and which adjusts the light intensity which passes from the aperture of the first diaphragm onto the condenser lens.

3,595,148
TOY CAMERA

George Cagen, Brooklyn, N.Y., assignor to Ideal Toy Corporation, Hollis, N.Y.

Filed Feb. 19, 1969, Ser. No. 800,512
Int. Cl. G03b *17/50*
U.S. Cl. 95—13 13 Claims

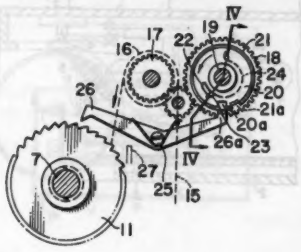


A toy camera permitting "amateur" or youthful photographers to take and develop photographs of substantial quality without complex attendant mechanism. The camera includes a self-contained detachable developing tank which communicates with and accepts exposed elements from the camera's film roll feed structure. Following each exposure, a film advance mechanism causes the exposed film segment to be advanced a predetermined length into the developing tank and at the same time places a fresh segment of unexposed film in the exposure position. A severing mechanism is then operated to cut the exposed segment from the continuous film roll, after which the severing member acts to block light from entering into the camera body during development.

3,595,149
SHUTTER COCKING AND FILM METERING DEVICE FOR A CAMERA

Sakae Fujimoto, Tokyo, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan

Filed July 5, 1968, Ser. No. 742,719
Claims priority, application Japan, July 10, 1967, 42/59584
Int. Cl. G03b *1/40, 1/62*
U.S. Cl. 95—31 4 Claims

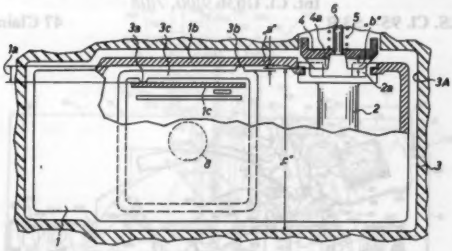


A member for driving the shutter cocking device is fixed on a shaft interlocked to the film winding knob, and the member for driving a film winding spool is connected frictionally to said knob. When the film is wound up by a predetermined amount, and the spool driving member comes to a stop, said member releases its grip on the shaft, and the shaft is further rotated to drive the shutter cocking device.

3,595,150
FILM MAGAZINE LOCATING MEANS

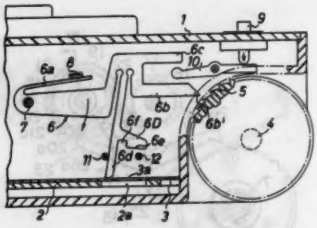
Dieter Engelsmann, Unterhaching, Germany, assignor to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Mar. 19, 1969, Ser. No. 808,447
Claims priority, application Germany, Mar. 26, 1968, A 29 521
Int. Cl. G03b *17/26, 17/28*
U.S. Cl. 95—31 CA 10 Claims



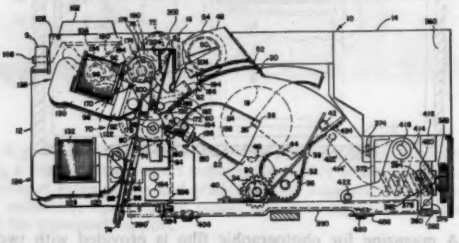
A magazine for photographic film is provided with two spaced-parallel external walls which define a groove serving to receive, with certain clearance, an elongated rib provided in the chamber of the camera housing. Such clearance is reduced, when the magazine is fully inserted into the chamber, by one or more projections which are provided on the rib and engage the adjoining wall or walls of the magazine. The projection or projections ensure that the claws of the rotary coupling member of the film-transporting mechanism in the housing properly engage the claws on the takeup reel of the magazine which is accommodated in the chamber.

3,595,151
FILM METERING DEVICE
Dieter Maas, Munich, and Richard Schmierl, Unterhaching, both of, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany
Filed Sept. 16, 1969, Ser. No. 858,463
Claims priority, application Germany, Sept. 21, 1968, P 17 97 375.0
Int. Cl. G03b *1/62*
U.S. Cl. 95—31 FM **12 Claims**



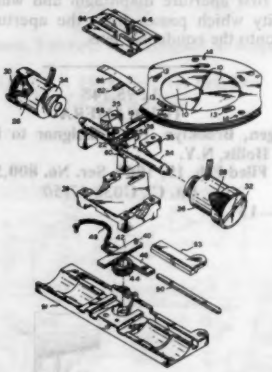
A film metering device in a camera for use with film having a perforation for each film frame consists of a toothed film transporting wheel which can be held against rotation by a rigid pawl forming part of a control lever which is biased from a starting position through an intermediate position and to an operative position in which the pawl engages the wheel. The lever has a springy arm which tracks the film and enters an oncoming perforation to permit movement of the lever to its intermediate position. The arm is deformed in response to further transport of the film and permits movement of the lever to its operative position upon completed transport of the film by the length of a frame. A follower element forming part of the springy arm engages a cam element formed on the camera having to lock the arm in its tensed operative position. The shutter release serves to unlock the springy arm and to return the lever and arm to their starting position.

3,595,152
EXPOSURE CONTROL SYSTEM INCORPORATING A MASTER ACTUATOR
Lawrence M. Douglas, Easton, Mass., assignor to Polaroid Corporation, Cambridge, Mass.
Filed June 30, 1969, Ser. No. 837,682
Int. Cl. G03b *9/00, 7/08*
U.S. Cl. 95—53 R **47 Claims**



A photographic exposure control mechanism for use with a programmed exposure control system which automatically regulates both aperture area and exposure interval. The mechanism features a master actuator member which performs operation functions both before and during an exposure sequence and during cocking operations. In its preexposure mode, the master actuator is latched in an initial position which maintains the engagement of releasable magnetic armatures with appropriate contact areas of the electromagnets of the control system. Spring members are mounted upon and movable with the actuator member to assure appropriate contact of the armatures with the electromagnets. At the commencement of an exposure operation, the master actuator pivots to release an aperture regulating mechanism and cause the commencement of automatic aperture regulation. Simultaneously, the master actuator releases the engagement of the spring members from the armatures, thereby permitting their selective release by the electromagnets. The movement of the actuator may also be used to perform switching functions for a control circuit. The master actuator also functions during a cocking sequence to maneuver control elements and their associated armatures into appropriate reengagement with their respective electromagnets. In a preferred embodiment, the aperture is formed as an arm-shaped lever which is pivotally mounted upon the supporting structure of the exposure mechanism.

3,595,153
ELECTRICALLY OPERATED SHUTTER
Ivar Saul, Portland, Oreg., assignor to Tektronix Inc., Beaverton, Oreg.
Filed July 28, 1969, Ser. No. 845,354
Int. Cl. G03b *9/24*
U.S. Cl. 95—53 **7 Claims**

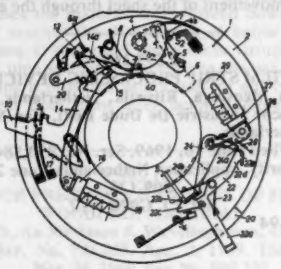


A camera shutter, actuated to its open position by an electrically operated solenoid, provides a settable aperture opening. The stroke of the solenoid mechanism is constant for opening and closing the shutter, and an actuator arm between the solenoid and the shutter drive ring is rotatable upon an adjustable cam operated pivot for predetermining the shutter-open aperture. A second solenoid is employed for closing the shutter, while detent means holds the shutter in either open or closed position.

3,595,154
PHOTOGRAPHIC CAMERA WITH ELECTRONIC TIMING DEVICE AND LEADTIME CONTROL FOR SELF-TIMER PHOTOGRAPHS
Winfried Espig, Calmbach, Black Forest, Germany, assignor to Prontor-Werk Alfred Gauthier G.m.b.H., Calmbach, Black Forest, Germany
Filed Sept. 3, 1968, Ser. No. 757,050
Claims priority, application Germany, Sept. 2, 1967, P 15 97 361.2
Int. Cl. G03b *9/64*
U.S. Cl. 95—53.3 **5 Claims**

A camera having an electronic time setting device including an electromechanical open-time stop for the shutter drive. With this there is provided an electronic delaying circuit which can be transferred into an operational readiness

state for temporarily locking the action of the shutter following the depression of the release button, and a signal light



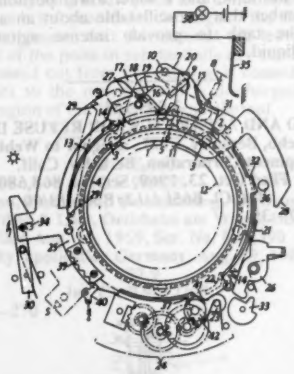
control which indicates both the beginning and the end of the operation of the delayed action cutoff.

3,595,155

SINGLE REFLEX CAMERA WITH INTERCHANGEABLE OBJECTIVE LENS HAVING SPRING DIAPHRAGM AUXILLIARY SHUTTER AND FLASH LIGHT SWITCH OPERABLE BY THE CAMERA SHUTTER RELEASE

Rolf Noack, Dresden; Johannes Weise, Dresden, and Wolfgang Krause, Gorlitz, all of, Germany, assignors to Veb Pentacon Dresden Kamera-und Kinowerke, Dresden, Germany

Filed Sept. 20, 1968, Ser. No. 761,224
Int. Cl. G03b *9/02*
U.S. Cl. 95—64 3 Claims



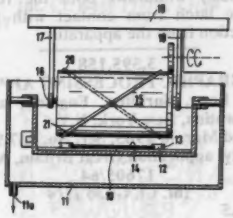
A single lens reflex camera having a shutter mechanism operated by a shutter release is provided with an interchangeable lens housing. The lens housing includes an objective lens, an auxiliary shutter and a switch which when closed connects a source of supply voltage to a flash light, a drive ring on the lens housing is urged in one direction by a first spring means and when released from a cocked position actuates the auxiliary shutter and the switch. A spring diaphragm in the housing is urged to a fully open position by a spring and a release means in the housing engages the camera shutter, when the lens housing is connected to the camera, to release the drive ring from a cocked position to initiate an exposure and to permit the spring diaphragm to change from a fully open position to a preset working aperture for flashlight exposure before the auxiliary shutter opens.

3,595,156

EQUIPMENT FOR DEVELOPING PHOTOGRAPHIC FILM

Walter Zimmermann, Freudenstadt, Schwarzw, Germany, assignor to Messrs MAFI Fiedler & Zimmermann, Freudenstadt, Germany

Filed Oct. 4, 1968, Ser. No. 765,236
Claims priority, application Germany, Oct. 6, 1967, P 15 97 709.0
Int. Cl. G03d *3/00*
U.S. Cl. 95—89 10 Claims



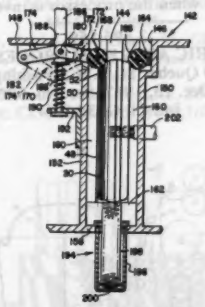
Equipment is disclosed for holding a film closely adjacent a rotating cylinder having external ribs for agitating the developing fluid close to the film surface which is held stationary between cams to attain a semicylindrical configuration. A half cylindrical tank is pivotable for holding the developing fluid and discharging it when tipped. For color processing a plurality of similar equipments has controls and programming means including separate valves for introducing fluids at specified times and for simultaneously discharging all tanks.

3,595,157

APPARATUS FOR RUPTURING A PROCESSING FLUID CONTAINING POD IN A PHOTOGRAPHIC CASSETTE

Philip G. Baker, Peabody; Gerald Cook, Lynnfield, and Rogers B. Downey, Lexington, Mass., assignors to Polaroid Corporation, Cambridge, Mass.

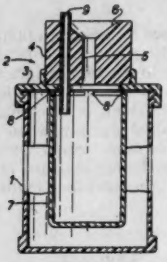
Filed July 3, 1969, Ser. No. 838,832
Int. Cl. G03d *3/00*
U.S. Cl. 95—89 21 Claims



Apparatus for receiving a cassette containing a pod of processing fluid for photographic material, for rupturing such pod and for expelling such fluid therefrom. Typically, the fluid filled pod is mounted within the cassette adjacent a support surface and initially protected by a removable cover plate. After removing the aforementioned cover plate to expose the pod, the cassette is inserted into the apparatus against the force of a coiled spring and between a pair of rollers mounted for rotation about parallel axes. One of these rollers is mounted on an overcenter mechanism to exert a force progressively across the pod during the insertion

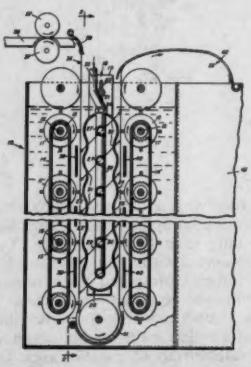
process when the overcenter mechanism is in a first position whereby the pod is ruptured and the fluid expelled therefrom. In a first embodiment, when the cassette has been fully inserted into the apparatus, the rollers exert a downward force on the cassette to lock the cassette in position. Displacement of the overcenter mechanism into its second position withdraws the roller connected thereto from contact with the cassette permitting the spring to eject the cassette permitting the spring to eject the cassette from the apparatus. In a second embodiment a releasable latch engages a recess of the cassette to lock the cassette in position against the force exerted thereon by the ejection spring. Displacement of the overcenter mechanism into its second position simultaneously withdraws both the roller connected thereto and the latch from contact with the cassette to facilitate its ejection from the apparatus.

3,595,158
PHOTOGRAPHIC PROCESSING APPARATUS
John Geoffrey Long, Surbiton, England, assignor to The Pavelle Corporation, New York, N.Y.
Filed Mar. 8, 1965, Ser. No. 437,952
Claims priority, application Great Britain, Apr. 28, 1964, 17605/64
Int. Cl. G03d *1/14*
U.S. Cl. 95—90.5 **16 Claims**



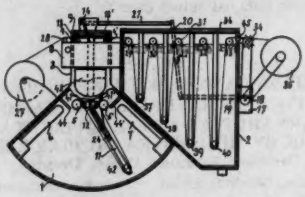
A photographic processor formed by an outer chamber with an inner chamber supported therein having walls which are spaced from the walls of the outer chamber. A cap seals both the inner and outer chambers and contains an opening through which liquid may be introduced into the inner chamber when the processor is upright. Openings are provided in the inner chamber adjacent the cap so that processing liquid may flow therethrough into the outer chamber when the processor is held horizontally and a liquid may subsequently flow therethrough and out through the opening in the cap when the processor is inverted.

3,595,159
GRAPHIC ARTS FILM PROCESSOR
Glen C. Bull, 2800 Quebec St. N.W., Washington, D.C.
Filed Dec. 13, 1967, Ser. No. 690,296
Int. Cl. G03d *3/04*
U.S. Cl. 95—94 **16 Claims**



An apparatus for processing graphic arts sheets including an enclosure for the processing fluid, a fluid circulating system, and a series of rollers within the enclosure. The rollers have ridged portions on their periphery which establish a continuously moving point of contact with the sheet as it is being processed. The fluid circulating system directs streams of processing fluid against both sides of the sheet in the direction of movement of the sheet through the enclosure.

3,595,160
FILM STRIP PROCESSING DEVICE
Hendrik Jan Mensinga, Rijswijk, Netherlands, assignor to N.V. Optische Industrie De Dude Delft, Van Miereveltaan, Delft, Netherlands
Filed June 16, 1969, Ser. No. 833,584
Claims priority, application Netherlands, June 28, 1968, 6 809 126
Int. Cl. G03d *3/12*
U.S. Cl. 95—94 **7 Claims**



A film strip processor having one or more processing tanks with a narrow neck portion through which the film is fed into and out of the tank, and a wider lower portion with a film guiding member that is oscillatable about an axis near the neck of the tank to provide intense agitation of the processing liquid.

3,595,161
METHOD AND APPARATUS FOR REFUSE DISPOSAL
Wells A. Webb, Berkeley, Calif., assignor to Webbco Research & Development Corporation, Berkeley, Calif.
Filed Oct. 23, 1969, Ser. No. 868,680
Int. Cl. B65f *1/12*; B30b *13/00*
U.S. Cl. 100—35 **14 Claims**

Method and apparatus for the disposal of solid waste material in which the refuse is transported out to sea to a

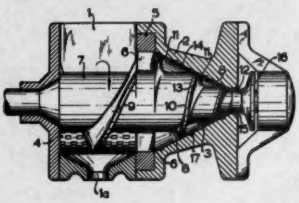
disposal barge. The barge is provided with a large diameter telescoping pipe extending below the surface. The upper end of the pipe extends approximately 50 feet above the surface. The refuse is conveyed from the barge to the upper end of the pipe and discharged into the pipe. The accumulation of material in the pipe from the surface of the sea to the top of the pipe causes the material to be forced downward in the pipe until it reaches the 300 foot level below the surface. Water pressure at that level compresses virtually all of the refuse in the pipe so that it descends to the sea bottom. The end of the pipe is provided with a trap for any of the materials which will float even after being compressed at that depth.

3,595,162

METHOD FOR PRESSING LIQUID OUT OF FIBROUS OR WOODLIKE MATERIAL

Kurt Heinrich, An Mevissen 5, Wevelinghoven, Germany

Division of Ser. No. 745,055, Apr. 2, 1969. This application Nov. 26, 1969, Ser. No. 880,232
Int. Cl. A47j *19/02*; B30b *9/02*, *9/12*
U.S. Cl. 100—37 6 Claims



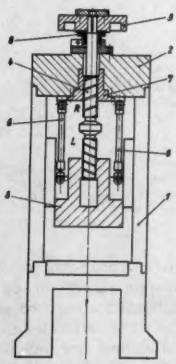
A method of pressing liquid out of fibrous material, such as particulated sugarcane or the like, in which the material is subjected in a tapering screw press to a continuously increasing pressure as it is forced from the large to the small diameter and of the press so that the material will leave the small diameter end of the press in substantially dry condition while the liquid pressed out from the material is caused to flow in countercurrent to the material and is discharged from the press in the region of the large diameter thereof.

3,595,163

FLY PRESS

Willi Baumann, Oetisheim, Wurttemberg, Germany, assignor to Firma Hiller & Lutz, Oetisheim am Wurtt, Germany

Filed Aug. 15, 1969, Ser. No. 850,390
Claims priority, application Germany, Aug. 29, 1968, P 17 77 057.9
Int. Cl. B30b *1/08*
U.S. Cl. 100—270 13 Claims



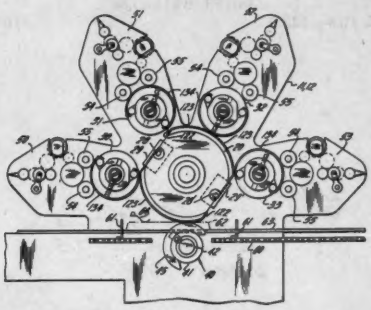
A nut is carried by a traverse, which forms part of a frame. A press screw has two oppositely handed screw threads near opposite ends. One of said screw threads is in threaded engagement with said nut. A press ram is in threaded engagement with the other of said screw threads. A flywheel is mounted on said press screw for rotation therewith. Drive means are provided to reciprocate said press screw so that said ram is reciprocated at a higher speed than said press screw.

3,595,164

EGG CARTON PRINTER

John C. Hovekamp, Elyria, Ohio, assignor to Wood Industries, Inc., Plainfield, N.J.

Filed Apr. 9, 1969, Ser. No. 814,648
Int. Cl. B41f *17/16*, *13/24*
U.S. Cl. 101—37 4 Claims



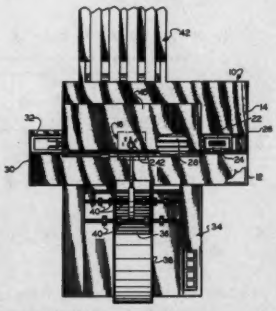
The printing device for multicolor decorating the top of egg cartons or the like articles has a central blanket cylinder with four plate cylinders contacting it for transferring an inked image thereto, each one of the plate cylinders having its own inking device. An impression cylinder is arranged which has a saddle on a part of its circumference for supporting the cavernous top of the egg carton and pressing the top surface of it against the blanket cylinder for having the image which has been inked on the blanket cylinder, printed on it. Power-operated linkage mechanism for separating the plate cylinders from the blanket cylinder and for throwing off simultaneously the inking rollers of the inking devices is arranged.

3,595,165

ADDRESSING MACHINE WITH TOGGLE-LINK MECHANISM

Richard A. Smith, Andover; Richard M. Gile, Kingston, and David S. Wilson, Rockland, all of, Mass., assignors to Dymo Industries, Inc., Emeryville, Calif.

Filed Nov. 26, 1969, Ser. No. 880,302
Int. Cl. B41l *47/06*; B41f *3/04*
U.S. Cl. 101—48 12 Claims



An addressing machine of the type in which addresses are sequentially printed upon workpieces by a print roller which

is reciprocated into contact with a stencil placed between the print roller and a table on the frame of the machine upon which the workpiece is located, the reciprocation of the print roller being accomplished by a toggle-link mechanism mounted upon the frame of the machine, the toggle-link mechanism having a link which is pivotally mounted on the frame and is selectively movable with respect to the table to selectively change the spacing between the print roller and the table for accommodating workpieces of different thicknesses.

3,595,166

THREE-LAYER STENCIL ASSEMBLY HAVING PLASTIC OVERLAY SHEET

Herbert P. Sherman, Chicago, Ill., assignor to Bell & Howell Company, Chicago, Ill.

Filed Feb. 20, 1969, Ser. No. 800,972
Int. Cl. B41n *1/24*
U.S. Cl. 101—128.2 **10 Claims**

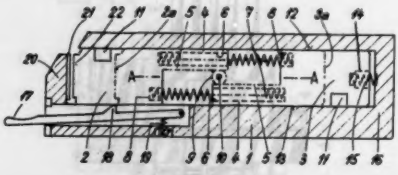
There is disclosed an improvement in the mimeograph stencil art comprising the manufacture of an overlay sheet for either a conventional typewriter stencil or in particular a stencil which can be prepared by means of heat transfer with a thermocopier and with this overlay sheet is capable of either thermal production or conventional typewritten production, comprising a sheet of tissue which has been coated on one side, only, with a film of elastomeric plastic, such as polyvinyl chloride or polypropylene.

3,595,167

IMPACT PRINTING MECHANISM

Armin Wirth, Zurich, Switzerland, assignor to Wirth Gallo & Co., Zurich, Switzerland

Filed Oct. 7, 1968, Ser. No. 765,473
Claims priority, application Switzerland, Jan. 11, 1968, 586/68
Int. Cl. B41f *1/38*; B41j *9/26*
U.S. Cl. 101—287 **3 Claims**



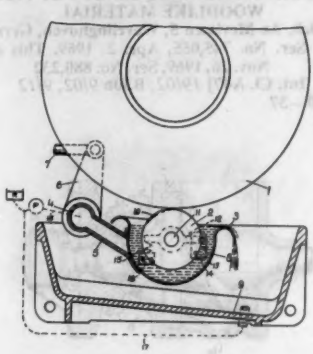
An impact printing mechanism comprising a pair of elements which move oppositely of each other so that the algebraic sum of the momenta of the elements is null during their motion and at the instant of impact of one of the elements on an associated printing plate.

3,595,168

INKING DEVICE FOR THE FORM CYLINDERS OF GRAVURE PRINTING PRESSES

Karl A. Klingler, and Rudolf Frey, both of Frankenthal, Pfalz, Germany, assignors to Schnellpressenfabrik Frankenthal Albert & Cie Aktiengesellschaft, Frankenthal-Pfalz, Germany

Filed Sept. 3, 1968, Ser. No. 757,042
Claims priority, application Germany, Aug. 31, 1967, P 16 11 286.0
Int. Cl. B41f *31/32*
U.S. Cl. 101—350 **4 Claims**



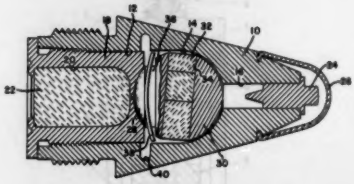
This invention provides an inking device for the form cylinder of a gravure printing press. The inking device comprises an inking roller immersed in an ink trough which is provided with means for adjustment. The inking device is adjustable to provide a contact pressure resulting in a thin, uniform layer of ink being supplied to the entire surface of the form cylinder.

3,595,169

TIME DELAY FUZE

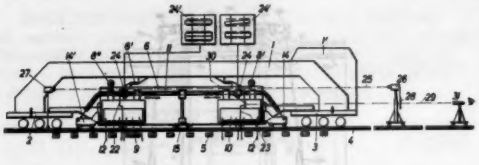
Richard T. Ziemba, Burlington, Vt., assignor to General Electric Company

Filed Sept. 18, 1969, Ser. No. 858,975
Int. Cl. F42c *15/26*
U.S. Cl. 102—79 **2 Claims**



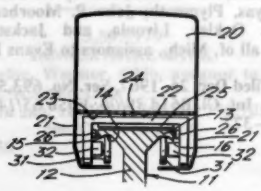
A time delay fuze for a projectile includes a ball rotor journaled for rotation within a cavity in the fuze. The firing pin, said cavity and the booster charge lie along the longitudinal axis of the fuze. The rotor carries a detonator in a diametral bore, and a dished retaining ring mounted on a seat cut into the ball normally fixes the ball with the detonator out of alignment with the longitudinal axis of the fuze. To release the rotor, the dished ring must be flattened and moved aft by setback force and must be enlarged by centrifugal force.

3,595,170
MOBILE TRACK TAMPER
Franz Plasser, and Josef Theurer, both of Johannesgasse 3, Vienna, Austria
Filed Dec. 18, 1968, Ser. No. 784,639
Claims priority, application Austria, Jan. 2, 1968, 1/68
Int. Cl. E01b 27/16
U.S. Cl. 104—12 26 Claims



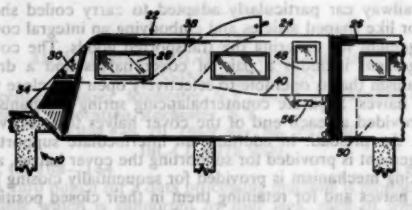
A mobile track tamper with a plurality of "twin" tamping tool assemblies has means for controlling the movement of the assemblies in the track direction in response to the location of a tie to be positioned between the opposed tamping tools of each assembly.

3,595,171
TRACTION UNIT FOR AN AIR CUSHION VEHICLE
Francis Ernest Sheppard, Oadby, England, assignor to Rolls-Royce Limited, Derby, England
Filed July 29, 1969, Ser. No. 845,795
Claims priority, application Great Britain, Aug. 8, 1968, 37933/68
Int. Cl. B61b 13/08
U.S. Cl. 104—23 FS 5 Claims



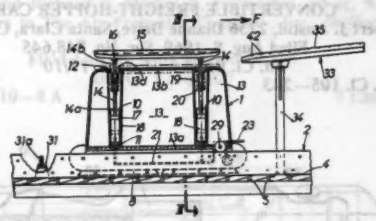
The invention concerns a traction unit for an air cushion vehicle which is adapted to be driven over a T-shaped rail or rails, the traction unit comprising at least one driving wheel which is rotatable about an horizontal axis and which is adapted for driving engagement with the underside of the head of a respective rail, a motor for driving the or each driving wheel, and air cushion means which, in operation, maintain the traction unit in a desired position with respect to the rail or rails such that the or each driving wheel is urged upwardly against the respective rail.

3,595,172
JET PROPELLED AIR CUSHION MONORAIL VEHICLE
John Van Veldhuizen, 31601 SW. 197th Ave., Homestead, Fla.
Filed Sept. 29, 1969, Ser. No. 861,614
Int. Cl. B61b 13/08
U.S. Cl. 104—23 FS 9 Claims



An air propelled vehicle including one or more lengthwise arranged and articulated cars. Each of the cars defines a longitudinal open-ended downwardly opening cavity or recess for bracingly receiving an elongated monorail structure along which the cars are to be moved and the lead car includes air pump means for intaking air and discharging air under pressure rearwardly for propulsion. Further, the cars include corresponding side plenum chambers communicated with each other and outlets for discharging air under pressure into the recesses for support of the cars by a cushion of air formed between the surfaces of said cars defining downwardly opening recesses and the opposing surfaces of the monorail structure. Further, the plenum chambers are in direct communication with the compressed air discharging air of the air pump means and the rearwardly opening outlet for discharging propulsion air is provided with throttle structure whereby the amount of propulsion air being discharged may be varied.

3,595,173
TRACK SHUNTING SYSTEM FOR MOVABLE PARTS FOLLOWING A GUIDING TRACK
Francois Louis Giraud, Plaisir, France, assignor to Societe De L Aerotrain, Paris, France
Filed June 26, 1969, Ser. No. 836,880
Claims priority, application France, June 28, 1968, 157,251
Int. Cl. B61b 13/08; B60v 1/02; E01b 26/00
U.S. Cl. 104—23FS 11 Claims

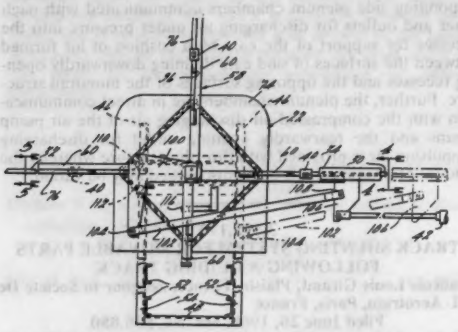


A switching system for ground effect conveying tracks over which a vehicle or the like movable part is adapted to move over a compressed fluid cushion fed with fluid through flap valves which allow the desired sustaining and guiding energy to be released only in registry with the movable part passing over them. The switching system provides means for shifting the movable part off such a track and back onto the same or another main track through the agency of an auxiliary track lying above the location of the movable part which is free to rise above the main track it is following. The feed of guiding and sustaining fluid is cut off when the movable part arrives at a point registering with a predetermined auxiliary track while the latter engages the movable part by raising an auxiliary structure carried by said movable part and provided with a large surface subjected to the fluid jets produced by the auxiliary track and forming sustaining cushions equivalent to those provided by the first-mentioned track.

3,595,174
SYNCHRONIZED TURNTABLE FOR A RECIPROCATING CONVEYOR
Robert J. Juve, Sterling Heights, Mich., assignor to Udylite Corporation, Warren, Mich.
Filed Nov. 20, 1969, Ser. No. 878,486
Int. Cl. B65g 25/10, 47/24
U.S. Cl. 104—99 10 Claims

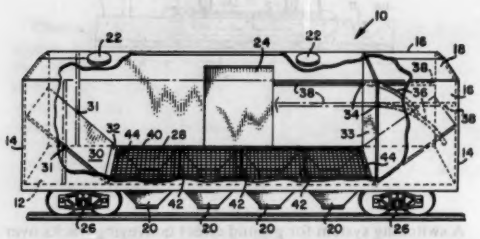
A conveying apparatus comprising a rail on which a plurality of work carriers are movably mounted and are intermittently advanced therealong by means of a reciprocating pusher mechanism. The rail is formed with a gas as defined by two spaced rail sections, between the ends of which a turnaround transfer mechanism is positioned for receiving work carriers from one rail section and transferring them to the

other rail section in a manner so as to effect a 180° rotation thereof. The operation of the turnaround transfer unit is



achieved in response to and in synchronization with the movement of the reciprocating pusher mechanism.

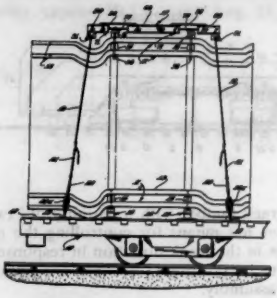
3,595,175
CONVERTIBLE FREIGHT-HOPPER CAR
Robert J. Austill, 2236 Dianne Drive, Santa Clara, Calif.
Filed Aug. 8, 1969, Ser. No. 848,645
Int. Cl. B61d *3/04, 3/06, 17/10*
U.S. Cl. 105—243 **10 Claims**



A vehicular hopper-box freight carrier adapted for transporting freight in granular and/or bulk form. The freight carrier includes a floor surface having a plurality of apertures opening to hopper means for discharging freight of granular form and of sufficient strength to support freight in bulk form above the surface. The carrier includes primary bulkhead means positioned to guide granular freight towards the hopper means and secondary bulkhead means adapted to longitudinally support freight in bulk form.

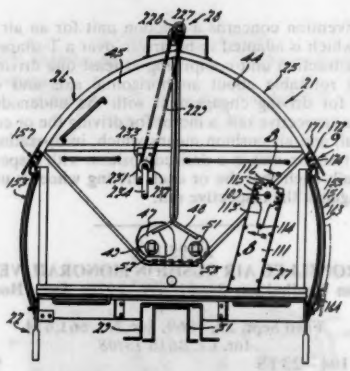
3,595,176
ADJUSTABLE AUTOMOBILE FRAME LOADING SYSTEM
Keith W. Broling, Olympia Fields, Ill., assignor to Portec, Inc., Chicago, Ill.
Filed Apr. 10, 1969, Ser. No. 815,133
Int. Cl. B60p *7/08;* **B61d** *45/00*
U.S. Cl. 105—367 **12 Claims**

Stacking apparatus for tying horizontally extending vehicle frames to the deck of a flat car arranged to accommodate stacking of frames of different lengths and widths, for adjustment of the locations of the supporting pedestals on the deck of the flat car. The bottom frame is supported on spaced pedestals on the deck of the flat car and spacers between the frames space the frames apart. Locating and load bearing rods extending through the spacers and frames, interlock the frames and transfer the weight of the frames to the bottom pedestals. A harness in the form of an open rectangular frame extends over the top frame of the stack of frames and is seated on the top spacers and is tied to the deck of the vehicle by tiedown rods or chains. The harness is provided with seats for the top spacers, which are adjustable laterally and longitudinally, to conform to automobile frames of various lengths and widths. The pedestals are mounted for adjustable movement laterally and longitudinally of the vehicle



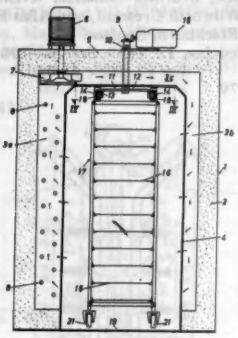
and are locked in adjustment by locking members having locking engagement with anchoring members for the pedestals and holding the anchoring members in place and accommodating longitudinal adjustable movement thereof, to adjust the positions of the anchoring members along the car.

3,595,177
RAILWAY CAR
James R. Bennett, New Boston; Harvey W. Chapman, Detroit; Tibor Matyas, Plymouth; John P. Moorhead, Northville; Gilbert F. Oakley, Livonia, and Jackson A. Shook, Northville, all of, Mich., assignors to Evans Products Company
Filed Dec. 26, 1967, Ser. No. 693,536
Int. Cl. B61d *39/00;* **E05b** *65/14*
U.S. Cl. 105—377 **31 Claims**



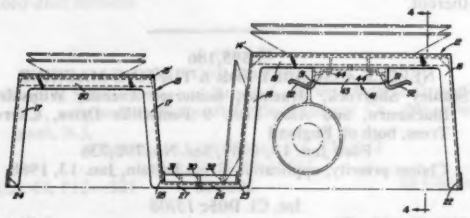
A railway car particularly adapted to carry coiled sheet steel or like shaped articles and embodying an integral cover arrangement for covering the transported goods. The cover arrangement includes a pair of cover halves and a drive mechanism that is operable to selectively open and close the cover halves. Separate counterbalancing spring mechanisms are provided at each end of the cover halves to selectively adjust the preload. In addition, an intermediate supporting arrangement is provided for supporting the cover halves, and a locking mechanism is provided for sequentially closing the cover halves and for retaining them in their closed position. A stop mechanism also is provided to preclude side-to-side swaying of the cover halves when they are in their closed position.

3,595,178
BAKERY OVEN
Karl Edvard Olof Dahlen, Boras, Sweden, assignor to Elektro-Dahlen A B, Boras, Sweden
Filed Sept. 23, 1968, Ser. No. 761,737
Claims priority, application Sweden, Oct. 6, 1967, 13,685/67
Int. Cl. A21b *1/00*
U.S. Cl. 107—55 8 Claims



For facilitating the cleaning of bakery ovens and preventing damage due to corrosion, mechanism is provided for rotating the tray cart or truck within the oven, with such mechanism being located in the top of the oven and so designed that the mechanism, when the cart is pushed into the oven, will lift the cart free of the oven floor.

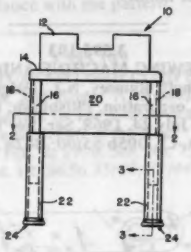
3,595,179
DINNERWARE RACK
William D. Taylor, Wooster, Ohio, assignor to Rubbermaid Incorporated, Wooster, Ohio
Filed Jan. 16, 1969, Ser. No. 791,705
Int. Cl. A47b *47/00*
U.S. Cl. 108—30 4 Claims



A dinnerware rack comprising a combination plate and cup stand having a top shelf and a pullout cup rack releasably slidably mounted under said shelf, and a smaller stand having a lower level top shelf, said stands having separably interconnected base racks for supporting dishes between the stands, said smaller stand when disconnected being nestable in said cup and plate stand.

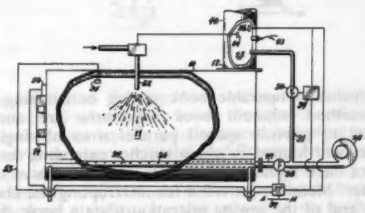
3,595,180
ADJUSTABLE HEIGHT DEVICE FOR DATA PROCESSING EQUIPMENT
Vincent H. Swoyer, Rochester, N.Y., assignor to Module Computer Corporation, Rochester, N.Y.
Filed Feb. 10, 1969, Ser. No. 797,948
Int. Cl. A47b *9/00*
U.S. Cl. 108—144 1 Claim

A card punch for a data processing machine is mounted on a table which is supported by four legs, each of which is rectangular in cross section. Each leg at its lower end extends slidably into the upper end of one of four, identical, tubular extensions, which also are rectangular in cross section. A disc-shaped foot or skid is removably mounted in the lower end of each extension. The extensions support the equipment at a height from which it can be operated readily by a person



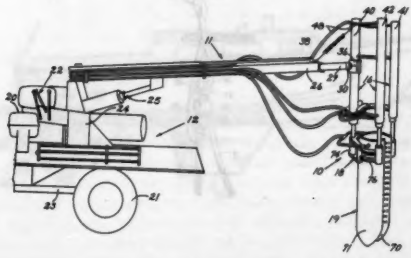
standing at the table; and when the extensions are removed by sliding them off from the lower ends of the table legs, the latter then support the table at a lower level, which is convenient for operating the equipment from a seated position.

3,595,181
AIR MODULATION FOR WASTE INCINERATOR
William M. Anderson, Wellsville; Lubertus Bakker, Wellsville, and Richard F. Stockman, Friendship, all of, N.Y., assignors to The Air Preheater Company, Inc., Wellsville, N.Y.
Filed Apr. 15, 1970, Ser. No. 28,895
Int. Cl. F23q *5/00*
U.S. Cl. 110—8 A 7 Claims



An incinerator having a principal combustion chamber and one or more secondary combustion chambers together with the controls that provide a predetermined range of temperature in all chambers to effect continuous and complete combustion of the waste matter placed therein.

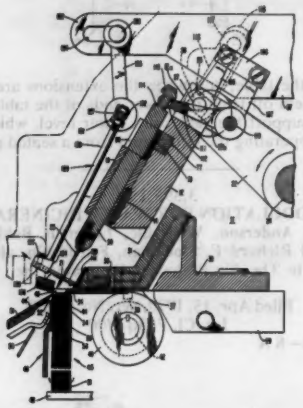
3,595,182
APPARATUS FOR UNDERGROUND TREATMENT OF POLES
Frank S. Clapp, 2750 South Platte, Englewood, Colo.
Filed Oct. 10, 1969, Ser. No. 865,366
Int. Cl. B27k *3/10*; A01c *23/02*
U.S. Cl. 111—6 8 Claims



An apparatus for the pressure injection of preservatives to the ground-implanted portion of a pole, includes convex,

spadelike, injection probes for surrounding the pole and applying preservatives over a large area of the buried end of the pole. The probes are hollow and have a multiplicity of holes in each convex pole facing surface. The apparatus grips the pole, and the probes are driven into the ground by hydraulic piston and cylinder motors.

3,595,183
BOOK SEWING MACHINE AND METHOD
William W. Stoothoff, Ramsey, N.J., assignor to North American Rockwell Corporation, Pittsburgh, Pa.
Filed July 24, 1968, Ser. No. 747,347
Int. Cl. D05b *65/00*; B42b *3/00*
U.S. Cl. 112—21 **28 Claims**

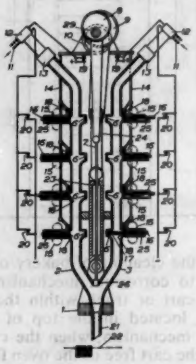


A cyclically operable book sewing or stitching machine and method wherein book signatures are successively stitched to provide spaced parallel rows of single or tail stitches and looped or chain stitches extending through the folds of each signature and connecting successive signatures together. Means is provided for interrupting the chain stitch at the end of the sewing operation upon a book, the operation of such means being initiated by the same means which operate a means for severing the tail thread, so that the stitchings of successive books are entirely disconnected from each other.

3,595,184
TUFTING MECHANISM FOR PRODUCING SHAG FABRICS
Charles W. Watkins, Soddy, Tenn., assignor to The Singer Company, New York, N.Y.
Filed June 23, 1970, Ser. No. 49,087
Int. Cl. D05c *15/22, 15/24*
U.S. Cl. 112—79 R **16 Claims**

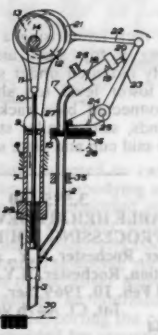
This disclosure relates to tufting machines for economically producing relatively long nap tufted fabrics hereinafter referred to as shag pile or shag fabrics. The disclosure is more specifically directed to a looper construction for a tufting machine and having means for defining the path of travel of the loops of yarn about said looper such that when the loops are severed one leg of said loops will be substantially longer than the other.

3,595,185
NEEDLE ASSEMBLY FOR A TUFTING MACHINE
Stanley Shorrock, Brarmar Somerset Avenue; Norman Ian Buckley, 1, Wilworth Crescent, and Alan Fish, 9 Feniscliffe Drive, all of Blackburn, England
Filed Jan. 13, 1969, Ser. No. 790,527
Int. Cl. D05c *15/08*
U.S. Cl. 112—79 **6 Claims**



A needle assembly for a tufting machine, designed to supply a selected one of a number of yarns which may be of different colors, to a hollow needle during each stroke thereof, and insert the resulting colored tufts with a backing fabric. The needle is associated with a feed tube having a number of yarn entry tubes, and yarn can be fed from each entry tube into the feed tube, cut off, and blown down to the needle. A ram holds the yarn in the needle during a stroke thereof.

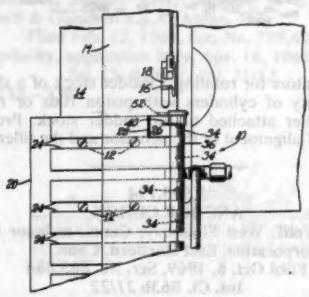
3,595,186
NEEDLE ASSEMBLY FOR A TUFTING MACHINE
Stanley Shorrock, Braemar, Somerset Avenue, Wilpshire, Blackburn, and Alan Fish, 9 Feniscliffe Drive, Cherry Trees, both of, England
Filed Jan. 13, 1969, Ser. No. 790,736
Claims priority, application Great Britain, Jan. 13, 1968, 2014/68
Int. Cl. D05c *15/08*
U.S. Cl. 112—79 **8 Claims**



A needle assembly for a tufting machine, comprising a hollow reciprocating needle, a stationary feed tube for the nee-

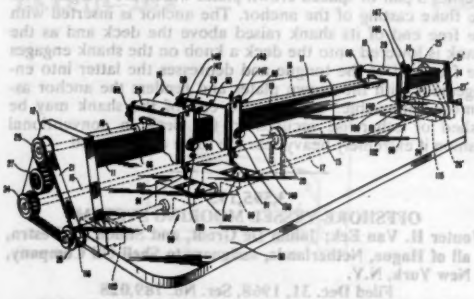
dle having at least one bore the axis of the lower end of each bore making an acute angle with the axis of the needle, pressure air means for transferring a short length of tufting material from a feed entry through the feed tube into one end of the needle, and a ram actuated to press the tuft into the needle and accompany the needle and tuft during a stroke of the needle to penetrate a backing fabric, the tuft being left in the backing fabric on completion of the stroke.

3,595,187
EDGE GUIDANCE AND HEMMING DEVICES
Richard W. Gray, Marblehead, Mass., assignor to USM Corporation, Boston, Mass.
Filed Jan. 28, 1970, Ser. No. 6,510
Int. Cl. D05b *35/02*
U.S. Cl. 112—141 **7 Claims**



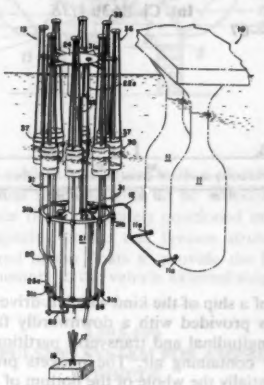
Automatic edge guidance and hemming of flexible sheet material, especially fabric, is achieved by one or more jets of fluid, commonly air, directed normal to the margin of the material and into a duct formed for guiding and folding the margin. A roll hem may be produced in a single jet-and-duct device, or single and double hem folds may be provided employing a plurality of preferably laterally aligned and spaced feed-duct sections.

3,595,188
SEWING MACHINE
Albert A. Schmedding, and Ernest L. Pfeifer, both of Oradell, N.J., assignors to Bergenfield Development Co., Inc., Dumont, N.J.
Filed Apr. 11, 1968, Ser. No. 720,632
Int. Cl. D05b *69/02*
U.S. Cl. 112—221 **18 Claims**



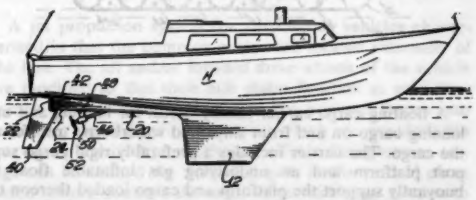
Sewing machine, here illustrated as a machine for simultaneously embroidering a plurality of pieces of goods with an identical pattern or for embroidering a plurality of identical patterns on a single piece of goods. The illustrative machine comprises a plurality of embroidering stations, a plurality of embroidering mechanisms each of which is disposed at a respective embroidering station, and means for traversing the goods relative to the mechanisms at the stations to embroider the goods in accordance with the pattern.

3,595,189
WAVE-ACTUATED LOAD COMPENSATOR
William B. McLean, and Edgar N. Rosenberg, both of San Diego, Calif., assignors to The United States of America as represented by the Secretary of the Navy
Filed Feb. 2, 1970, Ser. No. 7,497
Int. Cl. B63b *35/00, 35/44*
U.S. Cl. 114—0.5 **6 Claims**



A wave-actuated floating load compensator having a chamber located substantially below the area of surface wave turbulence receives liquids, usually excess ballasting water or bilge water from a remotely disposed floating hull. A plurality of, preferably eight, reciprocally actuated pumping units is circumferentially disposed about the submerged chamber to ensure dynamic stability. A valve, provided on a chamber, meters the amount of fluid entering and the pumping units pump the fluid into the surrounding water. The valve and the pumping units thusly prevent inadvertent overloading of the compensator and its possible sinking. Having floats concentrically carried and guided on its associated pumping unit, eliminate costly seals and complicated linking mechanisms found in known devices.

3,595,190
SAILBOAT CONSTRUCTION
Charles W. Lapworth, P.O. Box 1756, Newport Beach, Calif.
Filed Sept. 29, 1969, Ser. No. 861,630
Int. Cl. B63b *35/00, 3/38*
U.S. Cl. 114—39 **1 Claim**



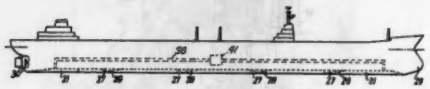
A sailboat construction for an auxiliary-powered sailboat. The construction includes a hull having a bilge and provided

at its intermediate portion with a fin keel. A hollow skeg depends from the rear portion of the hull, with the interior of the skeg serving as drain passage means leading to the bilge. A vertically extending rudder post is supported by the hull adjacent the skeg. A spade rudder is secured to the rudder post, the upper front portion of the rudder being formed with a vertically extending rudder surface abutting the rear edge of the skeg and the downwardly and forwardly extending rudder surface abutting the rear portion of the skegs lower edge. A drive shaft extends through the skeg to a supporting strut depending from the skeg.

3,595,191
SHIPS AND BOATS

John Wakelam Grundy, 63, Cleveland Road, North Shields, Northumberland, England

Filed Oct. 11, 1968, Ser. No. 766,715
Int. Cl. B63b *1/38*
U.S. Cl. 114—67 **11 Claims**

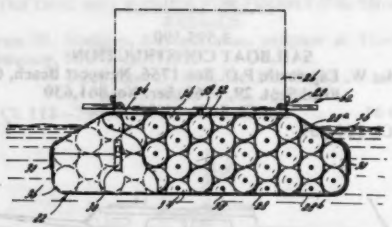


The hull of a ship of the kind which is driven by submerged propellers is provided with a downwardly facing recess divided by longitudinal and transverse partitions into separate pockets for containing air. The pockets preferably extend over substantially the whole of the bottom of the hull and are arranged in rows extending substantially from the bow to the stern of the vessel. An air duct is provided extending between the frontmost and rearmost pocket in each row.

3,595,192
FLOATING CARGO CARRIER

Virgilio P. Vega, 8207 Queen Anne's Drive, Silver Spring, Md.

Filed July 30, 1969, Ser. No. 846,162
Int. Cl. B63b *25/00*
U.S. Cl. 114—72 **11 Claims**

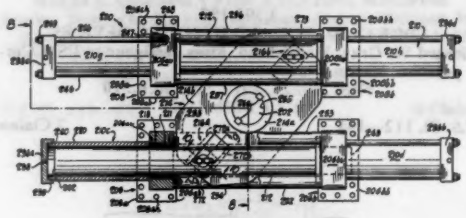


A floating cargo carrier ideally useful for loading and unloading cargo on and from ships and waterborne transfer of the cargo. The carrier includes a preferably rigid cargo support platform and an underlying gas inflatable float to buoyantly support the platform and cargo loaded thereon on water. Foldable catwalks are attached to the platform on either side to facilitate, when the catwalks are in a raised horizontal position, cargo handling, and when folded down constituting vertical platform supports and protection means for the float when deflated.

3,595,193
STEERING MECHANISM FOR SHIPS

William E. Heese, Akron, Ohio, assignor to Allen Electric and Equipment Company

Filed June 6, 1968, Ser. No. 776,286
Int. Cl. B63h *25/30*
U.S. Cl. 114—150 **11 Claims**

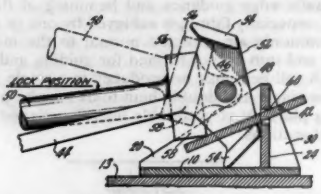


Fluid actuators for rotating a rudder stock of a ship utilizing a plurality of cylinders with piston rods or rams that operate a tiller attached to the rudder stock. Provision is made for self-alignment of the actuator and the tiller.

3,595,194
ANCHOR CHOCK

Robert D. Wolff, West Simsbury, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

Filed Oct. 6, 1969, Ser. No. 863,884
Int. Cl. B63b *21/22*
U.S. Cl. 114—210 **8 Claims**



Apparatus for stowing an anchor of the fluked variety on the deck of a ship has a boxlike anchor chock fixed to the deck which is open at one end to receive the crown end of the anchor. A locking tongue pivoted at one of its ends adjacent the closed end of the chock extends into the chock compartment and, when an anchor is inserted into the chock, overlies a pair of spaced crown plates which are integral with the fluke casting of the anchor. The anchor is inserted with the free end of its shank raised above the deck and as the shank is lowered onto the deck a knob on the shank engages the free end of the tongue and depresses the latter into engagement with the crown plates and renders the anchor assembly immovable. The forward end of the shank may be lashed or otherwise secured to the deck in conventional fashion if extremely heavy seas are to be encountered.

3,595,195
OFFSHORE VESSEL MOORING SYSTEM

Wouter H. Van Eek; Johan De Groot, and Simon F. Westra, all of Hague, Netherlands, assignors to Shell Oil Company, New York, N.Y.

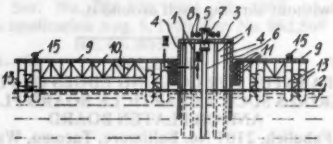
Filed Dec. 31, 1968, Ser. No. 789,028
Claims priority, application Netherlands, May 8, 1968, 6806466
Int. Cl. B63b *21/50*
U.S. Cl. 114—230 **7 Claims**

An offshore vessel mooring system in which a one-point mooring buoy has attached thereto a mooring cable and

floating hose which are maintained in an extended condition along the surface of the water by a floating propulsion unit

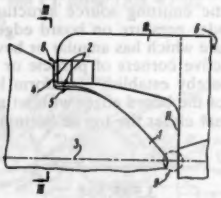
attached to the free ends of the mooring cable and floating hose to thereby facilitate the mooring of a vessel.

3,595,196
FLOATING PLATFORM FOR VESSEL MOORING
Bruno Riffeser, Milan, Italy, assignor to S.T.O. Societa Trasporti & Oleodotti S.p.A., Milan, Italy
Filed Feb. 12, 1969, Ser. No. 798,623
Claims priority, application Italy, Apr. 16, 1968, 15325A/68
Int. Cl. B63b *21/00, 21/52*
U.S. Cl. 114—230 **3 Claims**



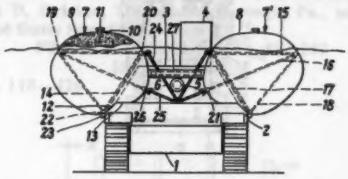
Floating platform comprising a rigid structure driven into the sea bottom and projecting from the sea surface, and a floating platform freely rotatable and vertically movable with respect to the rigid structure, but restrained thereto in its transverse displacements. The floating platform is of an elongate shape in order to enable a vessel moored thereto to be disposed in accordance with the best strong side wind, the platform being also capable of varying its height relative to the sea surface, in which it can be completely immersed.

3,595,197
PUSHER VESSEL ADAPTED FOR TOWING BY PUSHING
Boris Vladimirovich Bogdanov, ulitsa Mining, 17, kv. 37; Valery Nikolaevich Starostin, ulitsa Genkinoi, 52, kv. 3, and Vitaly Ivanovich Erlykin, Moskovskoe shosse, 151, kv. 12, all of Gorky, U.S.S.R.
Filed Jan. 16, 1969, Ser. No. 791,732
Int. Cl. B63b *21/00*
U.S. Cl. 114—235 R **4 Claims**



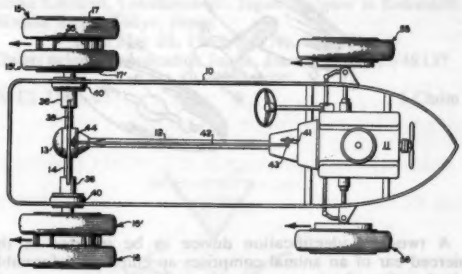
A pusher tug, that is a vessel designed or adapted for towing by pushing, has two downward-extending symmetrical recesses whose surface transversal with relation to the plane of symmetry of the vessel serves as a thrust member interacting with the respective thrust member on the aft end of the pushed vessel.

3,595,198
ARMORED VEHICLE FLOAT STRUCTURE
Fritz Hacker, Keltenstrasse 31, 714 Ludwigsburg-Ossweil, Germany
Filed Feb. 7, 1969, Ser. No. 797,495
Claims priority, application Germany, Feb. 9, 1968, P 15 56 456.4
Int. Cl. B63f *3/00*
U.S. Cl. 115—1 **9 Claims**



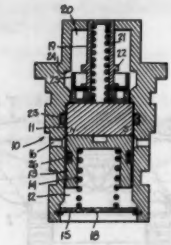
An armored vehicle is provided with a plurality of porous baglike shells and foam material to be introduced into the shells to produce floats oppositely positioned on the vehicle by means of spacing braces and tension struts, with rigid members secured to the floats to provide the floats with a shape complementary to the vehicle external shape.

3,595,199
JET PROPULSION SYSTEM FOR AMPHIBIOUS VEHICLE
Juan Faxas, Central Aguirre, P.R.
Filed Dec. 19, 1969, Ser. No. 886,804
Int. Cl. B63f *3/00*
U.S. Cl. 115—1 **12 Claims**



A jet propulsion system for amphibious vehicles characterized in that the pump or pumps are located externally of the hull. The aft and/or forward drive wheels of the vehicle are modified so that their hub plates function as axial flow pumps which discharge parallel to the axle and thence into respective drumlike pressure casings which are provided with rearwardly directed jet discharge orifices. The pressure casings can be rotated the desired degree in the vertical plane which in turn controls the angle of jet discharge relative to the horizontal. This capability affords optimum planing characteristics during water borne travel, assists in effecting transition from water onto a steep bank, and enables the vehicle to be easily rocked free should it become bogged down in mud.

3,595,200
DIFFERENTIAL PRESSURE INDICATOR
Guido D. Cilento, Madison Township, N.J., assignor to Fairfield Facility, Commercial Filters Division of the Carborundum Co., Lebanon, Ind.
Filed June 3, 1968, Ser. No. 734,143
Int. Cl. G01l *19/12*
U.S. Cl. 116—70 5 Claims



A pressure-sensitive indicator comprises a housing having a first means movable towards and away from a first position. A second means, movable towards and away from the first means, is normally retained towards the first means when the first means is in the first position. The first and second means are spaced apart by separating means. The second means is retained away from the first means until the first means is returned to the first position.

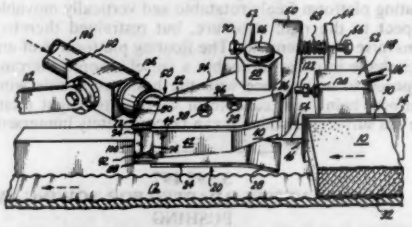
3,595,201
DEVICE APPROPRIATE FOR THE IDENTIFICATION OF ANIMALS
Theodorus Antonio Gerardo Oudenhoven, Vita Dumas, 499 Punta Chica, Partido San Fernando, Buenos Aires, Argentina
Filed Oct. 20, 1969, Ser. No. 867,705
Int. Cl. G01d *21/00*
U.S. Cl. 116—114 2 Claims

A two-part identification device to be inserted in the pierced ear of an animal comprises an elliptical deformable plastic plate having a circular opening with oppositely disposed grooves to receive another similar plastic plate having a dowel which is inserted through the animal's ear into the opening in the first plate, the tip of the dowel being spear shaped with a flat base whose margin is defined by a pair of intersecting ogive lines.

3,595,202
FLAGSTAFF
Aniceto R. Visitacion, 705 West 179th St., New York, N.Y.
Filed Oct. 22, 1969, Ser. No. 868,337
Int. Cl. G09f *17/00*
U.S. Cl. 116—174 10 Claims

A flagstaff having a relatively short axially movable sleeve which is prevented from rotating about the staff. The sleeve has a pair of spaced-apart discs on its upper end portion and a pair of spaced-apart discs on its lower end portion. A ring-shaped member is freely rotatable between the discs of each pair of discs. Each of the ring-shaped members has an arm radially extending therefrom, and a bar having several perforations is attached to the arms so that a flag may be easily hooked on the bar and thus can swing and whirl around the flagstaff without winding itself around it.

3,595,203
APPARATUS FOR COATING EDGES OF PLANK MATERIALS SUCH AS PARTICLE BOARD PLYWOOD AND OR PLATEN BOARD
Jack A. Fabulich, 2101 No. Baltimore, Tacoma, Wash.
Filed Aug. 2, 1968, Ser. No. 749,672
Int. Cl. B05c *9/00*
U.S. Cl. 118—2 3 Claims

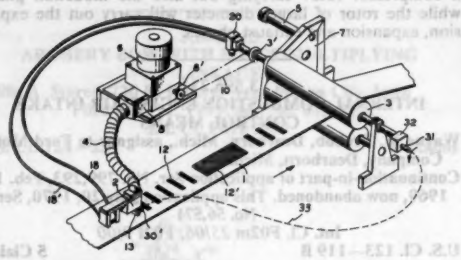


Edges of materials such as plywood and particle boards are coated and consequently sealed, producing an attractive edge appearance enhancing the utilization of such boards for shelving, etc. The apparatus and method used, continuously feeds a finishing substance having plastic properties into full contact with the edge of a board which is relatively moving by a pressurized emitting source of the plastic coating substance. This plastic emitting source structure confines the flow of plastic under pressure on board edges by utilizing a nozzle exit structure which has angular or beveled corners to receive the respective corners of particle or plywood board edges, etc., to thereby establish a uniform layer of coating across the width of the board edges without any plastic coating escaping to coat either the top or bottom surfaces of the boards.

3,595,204
FLUID APPLICATOR APPARATUS
Donald B. McIntyre, and Frederic S. McIntyre, both of Wellesley Hills, Mass., assignors to Acumeter Laboratories, Inc., Newton, Mass.
Filed Jan. 5, 1970, Ser. No. 530
Int. Cl. B05c *11/10*
U.S. Cl. 118—8 23 Claims

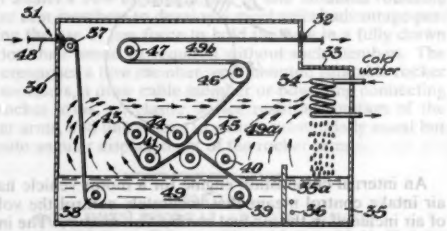
The present disclosure deals with fluid applicator ap-

paratus wherein a substantially uniform fluid flow is produced through novel lateral-expansion nozzle design for



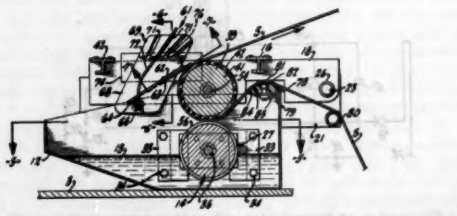
such purposes as the intermittent application of fluid deposits upon moving sheets or articles.

3,595,205
COATING APPARATUS
Kenneth S. Surprenant, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.
Division of Ser. No. 505,520, Oct. 28, 1965, abandoned. This application Aug. 6, 1969, Ser. No. 862,569
Int. Cl. B05c *11/00*
U.S. Cl. 118—61 **1 Claim**



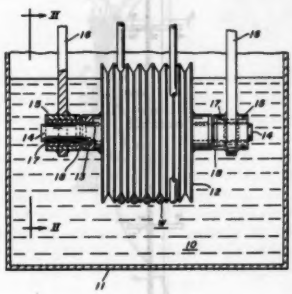
A generally closed housing includes means to pass a continuous length material therethrough. Means define a path within said housing for immersing said material in a tank of coating stuff and thereafter pass through a solvent-vapor atmosphere provided by a boiling tank disposed within the housing. Cooling means determine generally the extent of the gaseous environment and means are provided to recover solvent therefrom.

3,595,206
ADHESIVE-APPLYING APPARATUS
Charles A. Larimer, 230 Palm Ave., Millbrae, Calif.
Filed June 24, 1968, Ser. No. 739,281
Int. Cl. B05c *1/08, 11/02*
U.S. Cl. 118—126 **1 Claim**



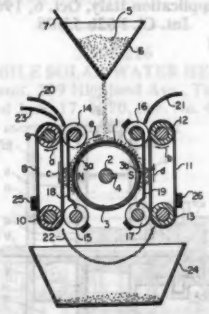
Portable apparatus and method for applying adhesive or like flowable material to a surface of a continuous sheet of material, such as wall covering and the like, in which a patterned nonsmooth applicator roller withdraws adhesive from a source of supply and applies the same to the sheet as it passes over the roller. Pressure adjustment is provided for between the applicator roller and a backup roller. Spring-urged adjustable scraper blade structure insures even distribution of adhesive and removal of any excess adhesive from the sheet. The sheet may be either manually or mechanically drawn through the apparatus during the adhesive applying procedure.

3,595,207
SINKER ROLL FOR HOT-DIP COATING BATH
Charles D. Stricker, Monroeville Borough, Pa., assignor to United States Steel Corporation
Filed Feb. 28, 1969, Ser. No. 803,269
Int. Cl. B05c *3/12*
U.S. Cl. 118—420 **4 Claims**



A sinker roll immersed in a bath of molten coating metal has molybdenum trunnions extending from the ends thereof, journaled in molybdenum sleeves set in aligned bearing hubs mounted on the vessel containing the bath.

3,595,208
ELECTROPHOTOGRAPHIC DEVELOPING APPARATUS
Yutaka Koizumi, Yokohama-shi, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan
Filed May 28, 1969, Ser. No. 828,581
Claims priority, application Japan, June 8, 1968, 43/48137
Int. Cl. B05b *5/00*
U.S. Cl. 118—637 **1 Claim**



A developing apparatus comprising an electrically insulative cylinder rotatably mounted relative to a fixed magnet therein in which a carrier-toner mix is fed onto said cylinder for forming magnetic brushes on the outer surface of the cylinder for brushing a photosensitive paper bearing an electrostatic latent image. The guiding means for guiding the paper along the brushes comprise generally linear reciprocat-

ing means disposed between an endless belt and the cylinder and engaging with guide rollers. The reciprocating means reciprocate transversely to the path of the paper and through the carrier-toner mix of the brushes so that the paper is prevented from deviating from its path and the developer powder forming the brushes is stirred.

3,595,209

HOUSEHOLD PLAY AND EXERCISE POST ASSEMBLY FOR CATS

Paul A. Parker, Bouckville, N.Y.

Filed Jan. 28, 1969, Ser. No. 794,735
Int. Cl. A01k *15/00*
U.S. Cl. 119—29 2 Claims

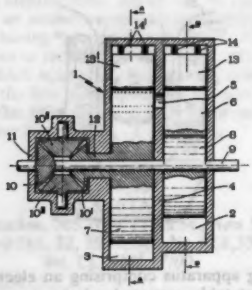
A household cat play and exercise post assembly of a knockdown nature which is adapted to be assembled in a stationary vertical floor to ceiling position in a room and is composed of separable wooden post sections joined in end-to-end contact by interfitting removable dowels and horizontal platforms anchored by the dowels at selected joints between the post sections that extend from a floor-engaging baseplate to a ceiling engaging top plate attached to the uppermost post section by a spring-biased dowel.

3,595,210

ROTARY PISTON ENGINE

Antioco Lampis, Via Ubisti 2, Nuoro, Italy

Filed Dec. 18, 1969, Ser. No. 886,192
Claims priority, application Italy, Oct. 6, 1969, 53,591A/69
Int. Cl. F02b *53/08*
U.S. Cl. 123—8.41 9 Claims



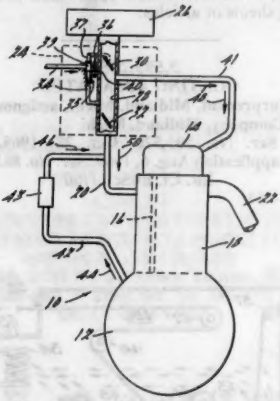
A rotary piston engine comprising a stator, two rotors of different diameters, each rotatably mounted in a separate chamber in the stator, gear means and a drive shaft for rotating the rotors in opposite directions, the rotor of smaller diameter having its axis out of alignment with the axis of the rotor of larger diameter so that during rotation of the rotors in opposite directions the rotor of smaller diameter will act as a compressor rotor carrying out also the induction phase while the rotor of larger diameter will carry out the explosion, expansion and exhaust phases.

3,595,211

INTERNAL COMBUSTION ENGINE AIR INTAKE CONTROL MEANS

Wayne M. Brehob, Dearborn, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Continuation-in-part of application Ser. No. 799,293, Feb. 14, 1969, now abandoned. This application July 20, 1970, Ser. No. 56,571
Int. Cl. F02m *25/06*; F02f *9/00*
U.S. Cl. 123—119 B 5 Claims



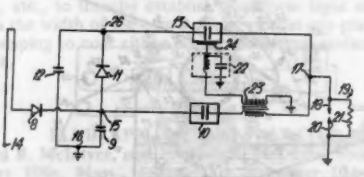
An internal combustion engine for a motor vehicle having air intake control means that accurately control the volume of air included in the air-fuel combustion mixture. The intake of ambient air through the engine carburetor is metered and fuel introduced downstream in direct proportion. A portion of this metered air is directed to the crankcase for ventilation purposes prior to introduction of fuel and is exhausted from the lubrication circuit into the engine intake manifold. The lubrication circuit of the engine otherwise is sealed against the entry of ambient air.

3,595,212

SPARKING CIRCUIT FOR AN IGNITION SYSTEM FOR INTERNAL COMBUSTION ENGINES

Leslie Barnes, Littleover, Derby, England, assignor to Rolls-Royce Limited, Derby, England

Filed Feb. 17, 1969, Ser. No. 799,688
Claims priority, application Great Britain, Feb. 19, 1968, 8020/68
Int. Cl. F02p *3/06*
U.S. Cl. 123—148 E 3 Claims



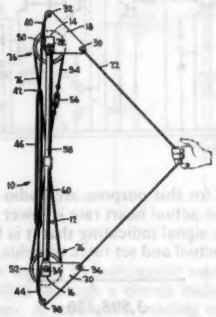
The invention concerns a sparking circuit for an ignition system for internal combustion engines comprising first and second discharge circuits, the first circuit being operatively

associated with said second circuit via delay circuit means, discharge of the first circuit causing said second circuit to discharge after said first circuit but at less than 1 millisecond thereafter.

3,595,213
ARCHERY BOW WITH FORCE-MULTIPLYING LINKAGE

Willis A. Storer, 720 N. Federal Ave., Mason City, Iowa

Filed Apr. 11, 1969, Ser. No. 815,442
Int. Cl. F41b *5/00*
U.S. Cl. 124—23 **8 Claims**

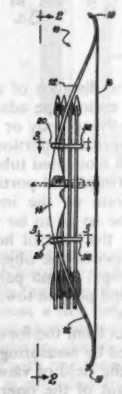


An archer's bow utilizing a pair of end mounted rotatable rocker arm members to develop a mechanical advantage permitting the use of less force to hold the bow in a fully drawn position than would be required without such members. The bow comprises a bow member, end mounted rotatable rocker arm members, a draw cable member or bowstring connecting the rocker arms, an elastic device resisting rotation of the rocker arms, and link means to ensure substantially equal but opposite angular displacement of the rocker arms.

3,595,214
BOW WITH PIVOTAL ARROW QUIVER

Richard J. O'Malley, Chicago, Ill., and Ronald N. Kolpin, Berlin, Wis., assignors to Kolpin Bros. Co., Inc., Berlin, Wis.

Filed Jan. 21, 1969, Ser. No. 792,345
Int. Cl. F41b *5/06*
U.S. Cl. 124—24 **8 Claims**



A bow quiver construction for attachment to a bow. The construction includes a pair of attaching members and means for securing these members to the strip of the bow on opposite sides of the handgrip. Additional arrow holding members are pivotally connected to the attaching members, and means are defined by the arrow holding members for removably holding arrows. The arrow holding members are movable between two positions with the arrows being carried with the members and whereby the bow can be operated in one position while in the other position, the arrows are moved out of the way to permit stringing of the bow.

3,595,215
MAGAZINE-TYPE BOW QUIVER

Marvin L. Wilkie, 8115 W. 62nd Ave., Arvada, Colo., and Archie F. Phillips, 3330 Ames, Denver, Colo.

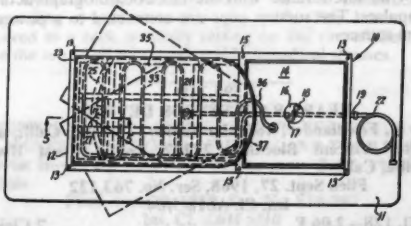
Filed July 7, 1969, Ser. No. 839,311
Int. Cl. F41c *25/00*
U.S. Cl. 124—52 **15 Claims**

Quiver supporting a plurality of arrows on a bow with the arrows being rotated obliquely to one another about a common axis to separate the heads and fletched ends of adjacent arrows in a balanced array. The quiver comprises a support body including generally U-shaped slotted portions opening through opposite ends of the body with the slotted portions being reversely inclined in opposite directions at the ends of the body about a central fixed line to support the arrows in a stacked arrangement to one another. The terminal ends of the slotted portions along the body turn outwardly to form slot openings facing in opposite directions to receive and discharge the arrows. A leading arrow preferably disposed diagonally across the front of the bow with the point down is discharged from the body in a pivotal action when a force is applied to move it against a centrally disposed stop member. The remaining arrows are automatically advanced along the slotted portions to dispose another arrow in the discharge position each time one is removed.

3,595,216
MOBILE SOLAR WATER HEATER

Joseph A. Lanciault, 209 Highland Ave., Tucson, Ariz.

Filed June 17, 1970, Ser. No. 46,861
Int. Cl. F24j *3/02*
U.S. Cl. 126—271 **4 Claims**



A mobile solar water heater mounted on the top of a camper and including a water tank and water heating coils

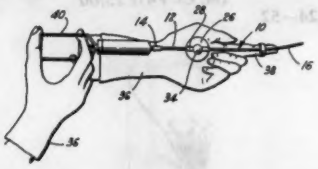
positioned in a heater box exposed to solar energy. The heater box is adjustable about a vertical pivot so as to be directed at the sun throughout the day.

3,595,217

FINE NEEDLE ASPIRATION BIOPSY OF PROSTATE

Robert E. Rheinfrank, 815 S. Denver, Tulsa, Okla.

Filed May 27, 1968, Ser. No. 732,180
Int. Cl. A61b *5/00*
U.S. Cl. 128—2 B **2 Claims**



A method and means for biopsy of the prostate gland utilizing cytologic studies as a basic for presumptive diagnosis. A biopsy needle is passed through a guide which may be fixed to the operator's gloved finger by a ring member. After the guide is placed on the finger, a finger cot is applied over the apparatus and finger for sterility and to facilitate insertion of the guide and finger internally of the body. The needle is then inserted through the guide and into the substance of the prostate. A syringe is attached to the needle and utilized for withdrawing a tissue sample whereupon slides are prepared for diagnosis of prostatic malignancy.

3,595,218

SYSTEM FOR MONITORING ANIMALS IN MOTION

Max B. Kirkpatrick; Andrew G. Harvey, and John M. Sparks, III, all of Box 1509, Wickenburg, Ariz.

Division of Ser. No. 683,719, Nov. 16, 1967.
Continuation of application Ser. No. 781,038, Dec. 4, 1968, now abandoned.
Filed Mar. 17, 1970, Ser. No. 19,519
Int. Cl. A61b *5/04*
U.S. Cl. 128—2.06 E **6 Claims**

A system for monitoring animals such as horses in motion, such as during swimming exercise, wherein suction cup attached electrodes on the animal are connected by leads to one or more heart action-measuring instruments such as an electrocardiograph and a pulse rate meter, the suction cup, electrodes and all junctures being of similar metal to prevent electrolytic interference with the electrocardiograph-actuating impulses. The suction cups are connected to a powered vacuum source.

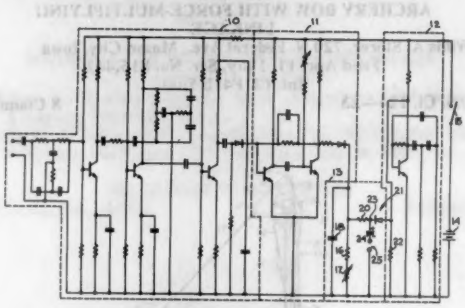
3,595,219

HEART RATE SENSOR DEVICE

Sidney L. Friedlander, 4613 La Subida, Tarzana, Calif., and Walter Vincent Blockley, 27727 Pacific Coast Hwy., Malibu, Calif.

Filed Sept. 27, 1968, Ser. No. 763,122
Int. Cl. A61b *5/04*
U.S. Cl. 128—2.06 F **7 Claims**

A portable and relatively inconspicuous device for monitoring one's heart beat which is adapted for use by healthy persons engaged in an exercise program as well as by those who have suffered some form of heart disease is disclosed. The device is set to produce an audio null at a particular heart beat rate. The user is notified by the device when his actual heart rate is either greater or less than the set rate.



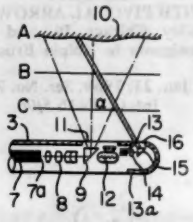
The signals used for this purpose are audio signals, one type indicating that the actual heart rate is lower than it should be and another type signal indicating that it is higher. A null indicates that the actual and set rates coincide.

3,595,220

DEVICE FOR MEASURING THE DISTANCE OF AN OBJECT FROM THE FORWARD END PORTION OF AN ENDOSCOPE

Ichizo Kawahara, Tokyo, Japan, assignor to Olympus Opitcal Co., Ltd., Tokyo, Japan

Filed Aug. 2, 1968, Ser. No. 749,809
Claims priority, application Japan, Aug. 8, 1967, Aug. 8, 1967, Aug. 8, 1967, Aug. 8, 1967, Aug. 29, 1967, 42/50507; 42/50508; 42/50510; 42/50511; 42/73425
Int. Cl. A61b *1/06*
U.S. Cl. 128—6 **7 Claims**

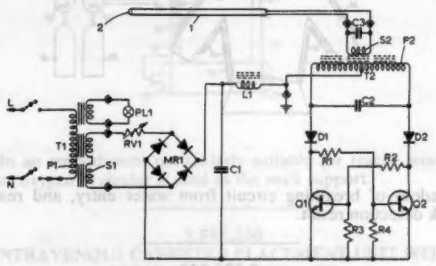


Device for measuring the distance of an object from the forward end portion of an endoscope adapted to be inserted into a hollow portion of a living body or the like for the inspection thereof. The forward end portion is connected to a control housing through an elongated tube. The image of an object is formed in the forward end portion by an objective lens system provided therein on the image is transmitted through the elongated tube so as to be viewed through an ocular means provided in the control housing. In order to determine the distance between the object and the forward end portion of the endoscope, a thin parallel light beam is emitted from the forward end portion toward the object so as to form a light spot thereon.

The distance of the object from the forward end portion of the endoscope is determined by measuring the position of the light spot with respect to the field of view of the endoscope of by measuring the amount of the operation for changing the direction of the thin parallel light beam so as to bring the light spot appearing in the field of view into registration with a predetermined index mark set in the field of view due to the fact that the position of the light spot with respect to the field of view of the endoscope varies as the distance between

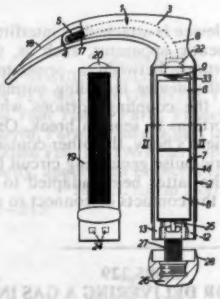
the object and the forward end portion of the endoscope varies.

3,595,221
ENDOSCOPIC HAVING ILLUMINATION SUPPLY UNIT
John Harold Blackett, London, England, assignor to Matburn (Holdings) Limited, London, England
Filed Mar. 4, 1969, Ser. No. 804,075
Int. Cl. A61b *1/06*
U.S. Cl. 128—6 **5 Claims**



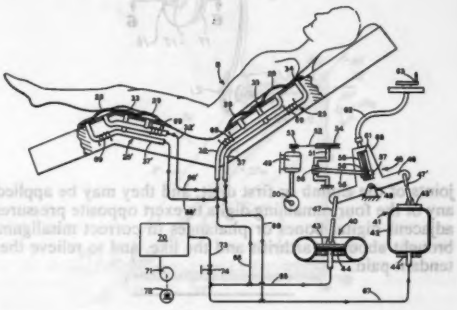
The disclosure relates to endoscopic instruments. The instrument is supplied through a circuit including a stepdown output transformer. A secondary winding of the transformer is connected with a light source of the endoscope. A push-pull oscillator circuit is connected with the primary winding of the output holdup oscillator circuit is connected to a current source and is arranged to supply current to the primary at a frequency of not less than 15 kHz.

3,595,222
LARYNGOSCOPE
William Noel Vellacott, 71 Albert Road South, Malvern, and Anthony James Sear, 18, Lansdowne Crescent, Malvern, both of Worcestershire, England
Filed June 10, 1968, Ser. No. 735,689
Claims priority, application Great Britain, June 13, 1967, 27204/67
Int. Cl. A61b *1/06*
U.S. Cl. 128—11 **8 Claims**



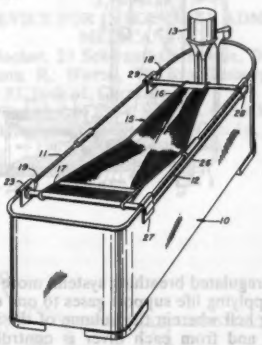
A laryngoscope comprising a main body provided by an integral moulding with handle and blade portions the latter of which has a forwardly facing socket for a light bulb. The handle is adapted to house a dry cell battery for operating the bulb and the laryngoscope incorporates a fixed electrical lead comprising a brass tube for electrically interconnecting a side terminal of the bulb with one terminal of the battery. A mobile electrical lead is provided for insertion into the brass tube which is embedded in the blade and which terminates at the socket, and the lower end of the handle incorporates manually operable means for moving the battery upwardly within the handle and towards the blade to an operative position in which the two ends of the mobile lead are respectively urged into contact with the central end terminal of the bulb and the other terminal of the battery.

3,595,223
MASSAGING DEVICE
John Frank Castagna, 835 Remsen Ave., Brooklyn, N.Y.
Filed Sept. 3, 1968, Ser. No. 756,983
Int. Cl. A61h *9/00*
U.S. Cl. 128—33 **1 Claim**



A body manipulating and massaging device which includes means for alternately lifting and lowering selected body portions while the body is in a supine condition, to effect a simulated massaging effect; and further, to lift spaced body portions while simultaneously lowering spaced body portions immediately adjacent the lifted body portions and alternating these operations in a rhythmic manner, to further simulate a massaging action.

3,595,224
DEVICE FOR HYDROTHERAPY TREATMENT
Gerald L. Walter, Rte 1, Box 146A, Manistee, Mich.
Filed June 21, 1968, Ser. No. 738,932
Int. Cl. A61h *9/00*
U.S. Cl. 128—66 **8 Claims**

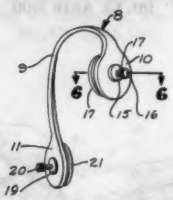


A hydrotherapy tank provided with a hammock for suspending a patient within the tank. The hammock is secured to a rack normally resting on the rim of the tub to free the tub of all transverse and longitudinal stresses.

3,595,225
SUPPORT MEANS APPLICABLE TO THE HANDS OF SUFFERERS FROM ARTHRITIS AND THE LIKE
Harriet Howes Beeman, 4034 Montgomery Road, Cincinnati, Ohio
Filed Apr. 28, 1969, Ser. No. 819,707
Int. Cl. A61f *5/10*
U.S. Cl. 128—77 **7 Claims**

Support or brace means applicable to portions of a human hand and comprising a twisted, substantially U-shaped,

resilient body portion terminating in pressure applying end portions. The end portions apply pressure in substantially opposite directions. The supports of the present invention may be applied to the hand so as to apply substantially oppositely directed pressures to the distal and proximal metacarpal

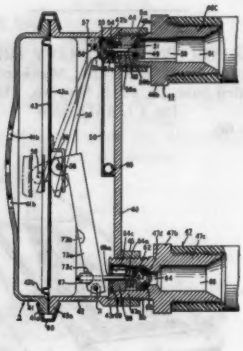


joints of the thumb or first digit, and they may be applied to any of the four remaining digits to exert opposite pressures to adjacent digital bones or phalanges to correct misalignment brought about by arthritis and the like, and to relieve the attendant pain.

3,595,226
REGULATED BREATHING SYSTEM

Robert Newcombe, Wayne, N.J., assignor to Air Reduction Company, Inc., New York, N.Y.

Filed Jan. 19, 1968, Ser. No. 699,192
Int. Cl. A62b 7/04
U.S. Cl. 128—142.2 8 Claims



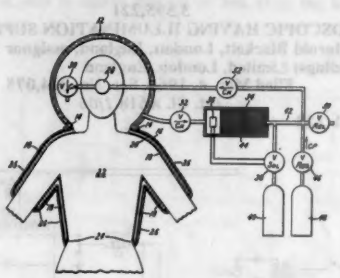
A demand-regulated breathing system; more particularly, a system for supplying life support gases to one or more divers from a diving bell wherein the volume of the intake and exhaust gas to and from each diver is controlled by valves operated by a system of levers coupled to a diaphragm in the wall of the diver's mask.

3,595,227
DIVING VEST

Frederick A. Parker, Broomall, Pa., assignor to General Electric Company

Filed Mar. 7, 1969, Ser. No. 805,293
Int. Cl. A62b 7/04
U.S. Cl. 128—142.5 2 Claims

Self-contained underwater breathing apparatus is provided with a nonstretching jacket extending to the user's waist, inside which a flexible double-walled jacket, connected to a transparent helmet, is pressurized so that it seals water out at waist and sleeve ends, and provides a compliance to allow breathing without any change in the total volume of water displaced by the diver and jacket, since inhalation deflates the flexible bladderlike jacket by approximately the volume inhaled. Improved thermal insulation, ease of breathing,

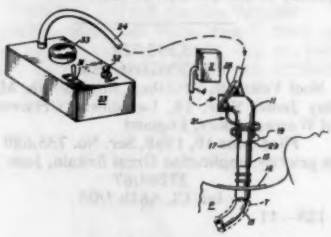


freedom of breathing circuit from water entry, and ready leak detection result.

3,595,228
FLOW LINE BREAK ALARM DEVICE

Robert C. Simon, 3159 Vaughn St., Aurora, Colo.; Michael W. Heron, 182 S. Humboldt, Denver, Colo., and Robert E. Swanson, 4725 Highline Place, Denver, Colo.

Filed Nov. 27, 1968, Ser. No. 779,529
Int. Cl. A62b 9/04
U.S. Cl. 128—145.5 12 Claims



A portable alarm device is attached to interfitting coupling portions in a therapeutic apparatus, such as, the metal or plastic coupling portions between a respirator hose and tracheostomy tube, the device including normally engaging electric contacts on the coupling portions which separate with the coupling portions to sense a break. One contact is connected to the patient's body, the other contact connected to a low-power electric pulse generating circuit for triggering an electric switch, the latter being adapted to activate the alarm element when the contacts disconnect to alert hospital personnel.

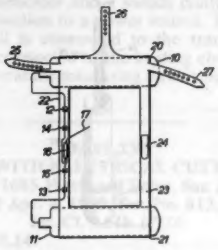
3,595,229
APPARATUS FOR DELIVERING A GAS INTO THE LUNGS OF A PATIENT

Bertram William Duck, Pyrford, Woking, Surrey, and Charles Esme Thornton Warren, Hollinbourne, Kent, both of, England, assignors to The British Petroleum Company, London, England and Electronic Pneumatic Automation Company Limited, Kent, England

Filed Feb. 6, 1969, Ser. No. 797,043
Claims priority, application Great Britain, Feb. 15, 1968, 7,444/68
Int. Cl. A62b 7/02
U.S. Cl. 128—145.8 5 Claims

This invention relates to an apparatus for delivering a gas into the lungs of a patient. The apparatus comprises a neck support and the patient's head is held in the extended position by means of straps which are attached to the neck sup-

port. The straps are conveniently used to secure the mouthpiece over the patient's nose and mouth.



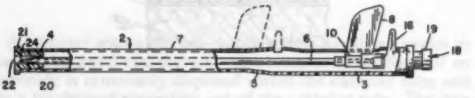
In an embodiment particularly suitable for rescue work a gas (oxygen) cylinder is used as the neck support.

3,595,230

INTRAVENOUS CATHETER PLACEMENT UNIT WITH TUBULAR GUIDE SHEATH

George M. Suyeoka, Chicago, and Dean R. Katerndahl, Wheaton, both of, Ill., assignors to Abbott Laboratories, Chicago, Ill.

Filed July 25, 1968, Ser. No. 747,502
Int. Cl. A61m 5/00
U.S. Cl. 128—214.4 7 Claims



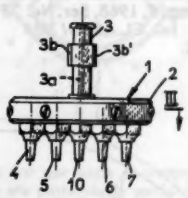
A catheter placement unit including a catheter shield with a catheter and needle positioned therein and the catheter shield comprising a flexible tubular hollow body having its distal end closed by a frictionally engaged end plug and having a slot of varying width extending through its distal end to a point adjacent but not through its proximal end for guiding the catheter and needle preparatory to and during venipuncture.

3,595,231

DEVICE FOR SIMULTANEOUSLY INJECTING A LIQUID AT A PLURALITY OF INJECTION POINTS

Michel Louis Paul Pistor, Paris, France, assignor to Societe dite: A Guerin, Paris, France, a part interest

Filed Feb. 17, 1969, Ser. No. 799,673
Claims priority, application France, Feb. 20, 1968, 140,593
Int. Cl. A61m 5/00
U.S. Cl. 128—215 1 Claim



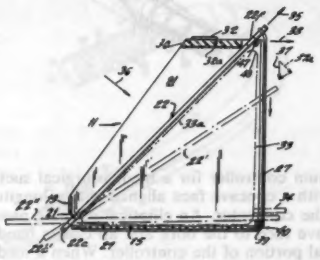
The device consists in dividing a stream of the liquid to be injected into elementary streams feeding nipples connectable to injection needles. The device consists of a body, preferably constituted by a flat cylindrical disc, which comprises a main flow nipple connectable to an injection syringe, a plurality of secondary flow nipples and a network of internal ducts for dividing the main stream of the aforesaid liquid.

3,595,232

NONGRAVITATIONAL INFUSION ASSEMBLY

Saul Leibinsohn, 11 Hagardom Street, Rishon Lezion, Israel

Filed Aug. 19, 1968, Ser. No. 753,405
Int. Cl. A61m 5/00
U.S. Cl. 128—214 17 Claims



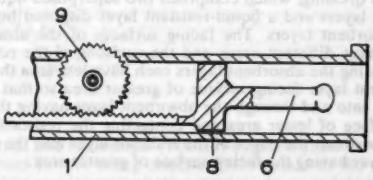
A combined container and fluid dispensing assembly housing a compressible bag of fluid. A slidably mounted pressure bar under control of suitable biasing means is caused to bear against the compressible bag of fluid to provide a substantially constant pressure upon the bag, causing the fluid to be dispensed at a substantially constant pressure throughout the infusion operation. In the inactive state, the housing protects the compressible bag of fluid against any possible damage and further provides additional storage space for the infusion set. No observation or control need be exerted upon the device during an infusion operation in order to maintain fluid flow at a constant rate.

3,595,233

MEDICAL DEVICE FOR INTERNALLY ADMINISTERING MEDICANTS

Robert Fuchslocher, 21 Schwanthalerstrasse, D8 Munich, 15, and Hermann R. Worch, 79 Brandenburgerstrasse, 85 Nuernberg, 33, both of, Germany

Filed Oct. 6, 1967, Ser. No. 673,436
Claims priority, application Germany, Oct. 14, 1966, June 7, 1967, W 42589; W 39946
Int. Cl. A61m 31/00
U.S. Cl. 128—264 8 Claims

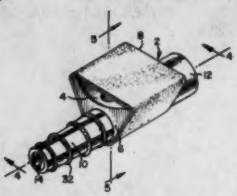


A medical device for internally administering medicants in body passages. The device comprises a hollow cylinder and a detachable nozzle secured to one end of the cylinder and insertable into a body passage. A thin tearable sack for a medicant is secured in the nozzle. An ejector piston formed with a rack portion is slidable in the hollow cylinder. A knurled wheel mounted in the cylinder's wall engages with the ejector piston's rack portion. Rotation of the knurled wheel advances the ejector piston into the nozzle and pushes the medicant through the tearable sack into the body passage.

3,595,234
VACUUM CONTROL FOR MEDICOSURGICAL SUCTION TUBE

Isaac S. Jackson, Greenwich, N.Y., assignor to David S. Sheridan, Argyle, N.Y.

Filed Feb. 19, 1969, Ser. No. 800,546
Int. Cl. A61m 1/00
U.S. Cl. 128—276 4 Claims

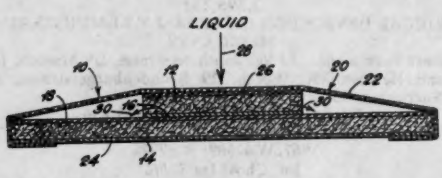


A vacuum controller for a medicosurgical suction tube is formed with a concave face aligned with a longitudinal bore through the connector. An elliptical opening passes through the concave face to the bore and an elastic band surrounds the central portion of the controller. When a medicosurgical tube assembly attached to the controller is connected to a vacuum source, a suction is not pulled in the tube assembly until the elliptical opening is closed by depressing the elastic band onto the concave face. The elastic band serves to prevent contaminating material entering the tube assembly from the control finger of the operator and suctioned material in the tube from touching the control finger of the operator.

3,595,235
MULTILAYER ABSORBENT PAD

Paul W. Jespersen, Westport, Conn., assignor to Georgia-Pacific Corporation, Portland, Oreg.

Filed May 16, 1969, Ser. No. 825,247
Int. Cl. A61f 13/16
U.S. Cl. 128—284 18 Claims



An absorbent pad, useful as a diaper, sanitary napkin, or medical dressing, which comprises two superposed liquid-absorbent layers and a liquid-resistant layer disposed between the absorbent layers. The facing surfaces of the absorbent layers have different areas and the surfaces of the resistant layer facing the absorbent layers each have less area than the absorbent layer facing surface of greater area so that liquid flowing into and through the absorbent layer having the facing surface of lesser area and contacting the resistant layer will flow about the edges of the resistant layer into the absorbent layer having the facing surface of greater area.

3,595,236
COATING TO AID TAMPON INSERTION AND TAMPONS COATED THEREWITH

Virginia A. Corrigan, Appleton, and Bruce A. Townsend, Oshkosh, both of, Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed Mar. 17, 1969, Ser. No. 807,490
Int. Cl. A61f 13/20
U.S. Cl. 128—285 10 Claims

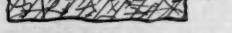
An improved coating material for application to the forward portion of absorbent tampons as an insertion aid. The coating comprises a physical mixture of polyethylene glycol and starch. The coating can be applied to the tampon without penetrating to the interior of the absorbent body and

remains stable under a wide range of handling conditions. Coated tampons are also described.

3,595,237
ADHESIVE ATTACHMENT OF REMOVABLE PROTECTIVE LINERS FOR NETHER GARMENTS

David O. Sargent, Westfield, and Vladimir Marchuk, Somerville, both of, N.J., assignors to Personal Products Company

Filed Oct. 6, 1969, Ser. No. 863,887
Int. Cl. A61f 13/16
U.S. Cl. 128—290 8 Claims

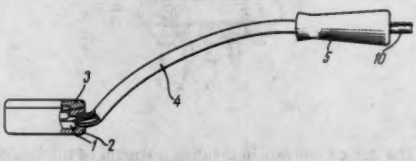


A protective liner which is temporarily, but securely, held to the interior crotch portion of nether garments by a thermoplastic, pressure-sensitive adhesive pattern bonded to a thermoplastic protective film provided on the under surface of the liner. The thermoplastic, pressure-sensitive adhesive is permanently fused to the protective film thus preventing delamination of the pressure-sensitive adhesive patterns from the film, and the adhesion level of the pressure-sensitive adhesive is such as to temporarily, but securely, adhere the protective liner to the crotch portion of the nether garment. The thermoplastic adhesive pattern is indirectly applied to the thermoplastic adhesive barrier film to prevent basic distortion of the film which would render it unfit for its intended protective function.

3,595,238
ELECTROSURGICAL APPARATUS TO COAGULATE BIOLOGICAL TISSUES

Stanislav Alexeevich Gavrilov, ulitsa Sheikmana, 19, kv. 149; Mikhail Afanasievich Kostenko, ulitsa Gagarina, 33, kv. 184, and Vasily Vladimirovich Volkov, ulitsa Komsomolskaya, 17, kv. 31, all of Sverdlovsk, U.S.S.R.

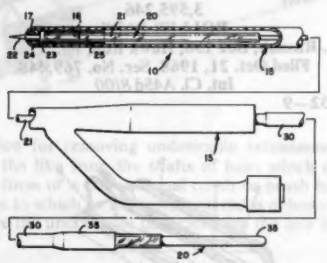
Filed Aug. 9, 1968, Ser. No. 751,575
Int. Cl. A61b 17/36
U.S. Cl. 128—303.1 2 Claims



An electrosurgical instrument comprises a box of heat-conducting metal with a cover thereon forming a hermetic enclo-

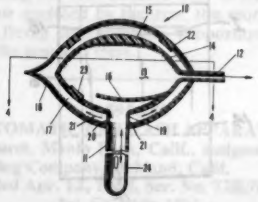
sure in which there is contained in isolation a heating element and a temperature transmitter. A tubular holder is connected to the enclosure and to a handle and connectors pass through the holder and handle to a temperature-measuring circuit with an indicator and a switch control power circuit adapted for connection to a power source. The temperature-measuring circuit is connected to the transmitter and the power circuit is connected to the heating element, the power circuit and temperature-measuring circuit being contained in a common unit.

3,595,239
CATHETER WITH ELECTRICAL CUTTING MEANS
Roy A. Petersen, 1685 Westwood Drive, San Jose, Calif.
Filed Apr. 4, 1969, Ser. No. 813,543
Int. Cl. A61b *17/36*
U.S. Cl. 128—303.14 **10 Claims**



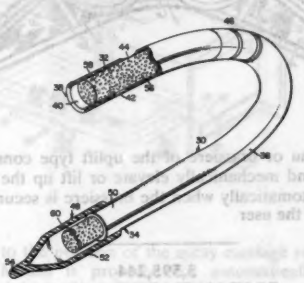
A catheter with a flexible catheter tube having an eyelet or ring at the distal end thereof. An obturator in the form of an electrode is removably disposed within the catheter tube and has a tip thereof projecting out of the catheter tube. The ring of the catheter tube limits the extent of the projection of the obturator tip from the catheter tube. A conventional electrosurgical apparatus is connected to the obturator-electrode for producing electrical energy to divide or cut tissue of a body so as to form a passageway through which the catheter tube advances.

3,595,240
HYDROCEPHALUS SHUNT WITH TWO-WAY FLUSHING MEANS
Alan J. Mishler, 59 MacArthur Road, Pueblo, Colo.
Continuation-in-part of application Ser. No. 549,517, May 12, 1966, now abandoned. This application Aug. 7, 1968, Ser. No. 756,713
Int. Cl. A61m *27/00*
U.S. Cl. 128—350 V **17 Claims**



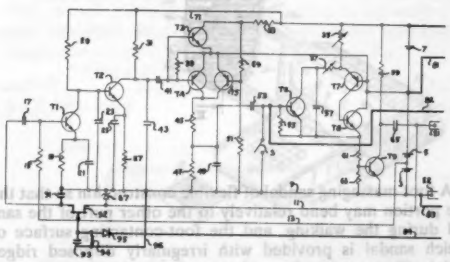
Drainage devices for use such as ventriculo-atrial shunts are provided which are particularly useful in neurosurgery to divert fluid from the cerebral ventricular system when abnormal collections of cerebrospinal fluid occur secondary to obstruction or failure of reabsorption. The surgical appliances of this invention have a first chamber and an at least partially surrounding second chamber with inlet means to the first and second chamber and outlet means from the second chamber. A valve means allows entrance of fluid to the first chamber from the inlet means but prevents backflow of fluid to the inlet means from the first chamber while allowing backflow of fluid from the second chamber to the inlet means.

3,595,241
INSURED INTERNAL FLOW MEDICOSURGICAL TUBES
David S. Sheridan, Hook Road, Argyle, N.Y.
Filed Feb. 19, 1969, Ser. No. 800,547
Int. Cl. A61m *25/00*
U.S. Cl. 128—350 **6 Claims**



Medicosurgical tubes have a swab member positioned inside the tube so constructed or arranged that it may be pulled through the tube and out the proximal end. In such a catheter, the lumen is positively protected throughout the tube length against the possibility of blood clots or other matter preventing liquid flow through the tube following the tube insertion procedure.

3,595,242
ATRIAL AND VENTRICULAR DEMAND PACER
Barouh V. Berkovits, Newton Highlands, Mass., assignor to American Optical Corporation, Southbridge, Mass.
Filed Mar. 26, 1969, Ser. No. 810,519
Int. Cl. A61n *1/36*
U.S. Cl. 128—421 **33 Claims**

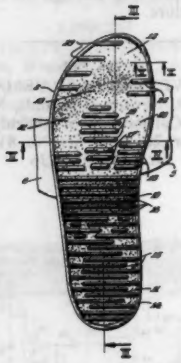


An atrial and ventricular (bifocal) demand pacer. A device is disclosed for providing electrical stimulation to the atrium after a first predetermined time, and to the ventricle after a second predetermined time, where both predetermined times are measured from the last natural heartbeat. The pacer monitors the ventricular endocardial electrogram and programs both the atrial and the ventricular stimulation accordingly. In patients with atrial bradycardia but normal atrio-ventricular (AV) conduction, only the atria are stimulated. When the condition is complicated with AV block, both the atria and the ventricles are pacer controlled. The interval between the atrial and ventricular stimulation is selected to facilitate the proper atrio-ventricular timing sequence. The pacer does not compete with spontaneous ventricular contractions.

3,595,243
UPLIFT BRASSIERE
Arthur H. Mount, 138 Elm Tree Lane, Elmhurst, Ill.
Filed Apr. 28, 1969, Ser. No. 819,647
Int. Cl. A41c 1/14
U.S. Cl. 128—469 3 Claims

A bandeau or brassiere of the uplift type constructed to positively and mechanically elevate or lift up the breasts of the user automatically when the brassiere is secured around the chest of the user.

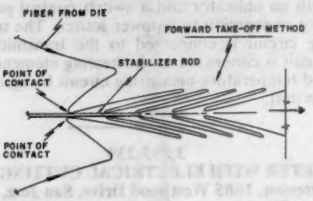
3,595,244
FOOT-MASSAGING SANDAL
Richard Kugler, Frankfurt, Germany, assignor to The Scholl Mfg. Co., Inc., Chicago, Ill.
Filed Oct. 30, 1968, Ser. No. 771,727
Int. Cl. A61f 5/14
U.S. Cl. 128—582 10 Claims



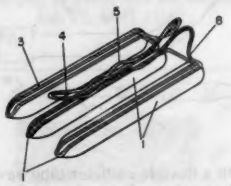
A foot-massaging sandal of flexible construction so that the toe portion may bend relatively to the other part of the sandal during the walking, and the foot-contacting surface of which sandal is provided with irregularly disposed ridges which effect a massaging action on the plantar surface of the foot.

3,595,245
CIGARETTE FILTER FROM POLYPROPYLENE FIBERS
Robert R. Buntin; John W. Harding; James P. Keller, and Vollie L. Murdock, all of Baytown, Tex., assignors to Esso Research and Engineering Company
Filed Aug. 14, 1968, Ser. No. 752,655
Int. Cl. A24f 7/04; B01d 27/00
U.S. Cl. 131—269 11 Claims

A roving of entangled and self-bonded fine fibers of polypropylene may be formed by a melt blown roving technique which comprises extruding the polypropylene through a die having the die openings in a circle into a gas stream to attenuate the extruded polypropylene into fibers and collecting the fibers as a tow. The roving or tow of polypropylene fibers is an aggregation of fiber loops which is essentially cylindrical in shape, made from essentially continuous fibers which are entangled and bonded to each other. The roving or tow may be cut as filters for cigarettes.

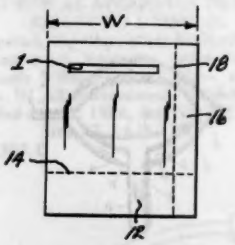


3,595,246
ROLLER PADS
Thomas L. Rusnak, Box 138, Hawk Run, Pa.
Filed Oct. 21, 1968, Ser. No. 769,448
Int. Cl. A45d 8/00
U.S. Cl. 132—9 3 Claims



A roller pad consisting of one or more soft and flexible cylinders arranged parallel and connected together at one end, the other end tapering to a point, the assembly being secured to the roller by means of a clip running above and parallel with the cylinders.

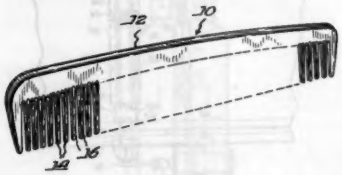
3,595,247
HAIR ROLLER PADS
William Anthony Campana, 9234 Gettysburg Drive, Warrensville Heights, Ohio
Continuation-in-part of application Ser. No. 625,188, Mar. 22, 1967. This application Aug. 1, 1969, Ser. No. 850,690
Int. Cl. A45d 1/00
U.S. Cl. 132—9 7 Claims



A hair roller pad for protecting the head of the user from the pinching or poking of hair rollers. The pad comprises a relatively thin rectangular-shaped member having an elongated slot adjacent one end thereof. The pad is formed of a reusable flexible moisture-absorbent material, such as resilient polyurethane foam, with the slot permitting free flow of a tress of hair therethrough for winding upon a hair roller. In one embodiment the pad is provided with sections which

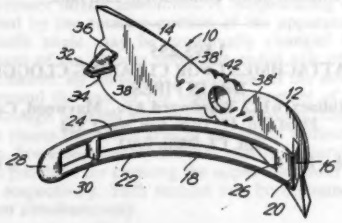
are separable from the remainder of the pad to selectively vary the pad size and thus expeditiously adapt the pad for use with different sizes of hair rollers. In another embodiment, a plurality of the pads are detachably connected together in striplike form for disposal in a compact roll.

3,595,248
CLEANSING DEVICE
Hershel Earl Wright, 18 8th Drive, Decatur, Ill.
Continuation of application Ser. No. 601,088, Dec. 12, 1966. This application Nov. 8, 1968, Ser. No. 790,493
Int. Cl. A49d *24/00*
U.S. Cl. 132—11 **5 Claims**



A device for removing undesirable extraneous particles, oils and the like from the shafts of hair, which device may take the form of a conventional comb or brush having teeth or bristles to which an adhesive material is cohesively applied to remove the undesirable particles from the hair shafts.

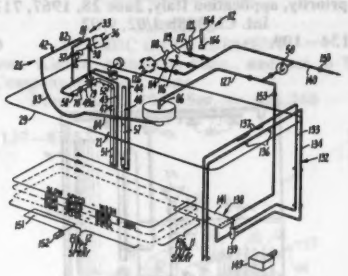
3,595,249
HAIR CLASP
Nathan L. Solomon, Cedar Lane, Englewood, N.J.
Filed Feb. 20, 1969, Ser. No. 800,927
Int. Cl. A45d *8/24*
U.S. Cl. 132—48 R **7 Claims**



A one-piece flexible hair clasp has an arm hingedly attached at one end with a detent clasp at the other end for releasably holding the arm about a tress of hair. The larger the tress of hair enclosed by the arm, the more the barrette and arm are flexed longitudinally proportionally to more securely hold the arm and tress.

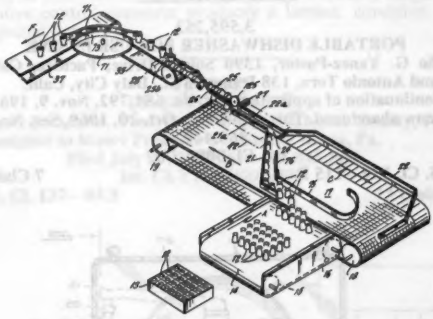
3,595,250
AUTOMATIC CARWASH APPARATUS
Mowatt M. Hurst, Menlo Park, Calif., assignor to Maisbary Manufacturing Company, Oakland, Calif.
Filed Apr. 12, 1968, Ser. No. 720,767
Int. Cl. B60s *3/04*
U.S. Cl. 134—45 **18 Claims**

An automatic carwash apparatus of the type having a spray carriage moving around the vehicle on an oblong overhead tract. The apparatus is formed to spray cleaning liquid against the vehicle in varying ways to provide more effective cleaning action on hard-to-clean surfaces, such as the front and rear ends, the entire device acting automatically to apply a preconditioner spray as the vehicle enters, wash and then rinse the vehicle, applying wax or other finish conditioners during the rinse operation. Both the preconditioner and wash sprays are formed to vary the angle of impingement. The various functions of the apparatus operate sequentially in response to entry of the vehicle into the apparatus and in



response to the position of the spray carriage relative to the vehicle. Means is provided for automatically accepting money to initiate the operational cycle so that the apparatus may be left to operate without attendants.

3,595,251
CONTAINER WASHING INVERTING AND CONVEYING APPARATUS
John J. Tarantola, Flushing, N.Y., assignor to Arlo Industries, Inc., Peekskill, N.Y.
Filed Dec. 26, 1968, Ser. No. 786,945
Int. Cl. B08b *9/08;* **B67c** *1/06*
U.S. Cl. 134—65 **10 Claims**



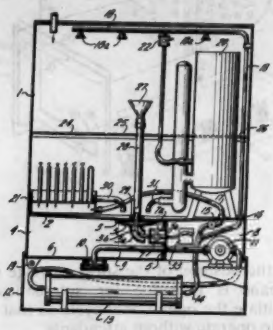
Jars or containers are multiple loaded open end facing down on the upper flight of a meshlike conveyor belt which delivers the containers single-file to an inverting means. Prior to arriving at the inverting means the containers are flushed clean by water sprayed upward through the mesh conveyor and thereafter an airstream, also directed up through the conveyor, acts to dry the containers. The inverting means consists of a screw conveyor and twisted bar means which maintains the containers in operative engagement with the screw conveyor to guide each container for gradual pivoting 180° to a position wherein the mouth faces up at the time the container reaches the output end of the inverting means. In an alternate embodiment for handling straight sided containers, guide rail means is provided to hold each container as it is being moved by the screw conveyor and pivoted by the twisted rail.

3,595,252

APPARATUS FOR CONTROLLED WASHING BY DE-IONIZED HIGH-PURITY, RECIRCULATED WATER, PARTICULARLY ADAPTED FOR SCIENTIFIC GLASSWARE

Giovanni Conte, Via A. Sigimbosco 6, Genova-Quinto, Italy

Filed June 26, 1968, Ser. No. 740,366
Claims priority, application Italy, June 28, 1967, 7117A/67
Int. Cl. B08b *3/02, 9/02*
U.S. Cl. 134—109 6 Claims



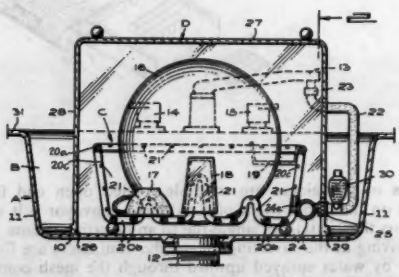
Apparatus for controlled washing of scientific glassware, articles and materials, comprising an open-topped housing adapted to use the de-ionized water produced by one or more ion exchange columns that are arranged in the lower portion of the housing, such housing being provided, at a certain distance from the base, with a partition on which (without requiring watertight relation) spray-washing can be effected with high-purity water that is collected in a underlying container and is recirculated by a motor-driven pump, and a conductimeter connected in the circuit to afford measurement of the specific resistance of wash water and, therefore, the degree of purity of the individual wash areas.

3,595,253

PORTABLE DISHWASHER FOR USE IN SINK

Julio G. Yanez-Pastor, 1390 Solano Drive, Pacifica, Calif., and Antonio Toro, 138 Irvington St., Daly City, Calif.

Continuation of application Ser. No. 681,792, Nov. 9, 1967, now abandoned. This application Oct. 20, 1969, Ser. No. 869,449
Int. Cl. B08b *3/02*
U.S. Cl. 134—115 R 7 Claims



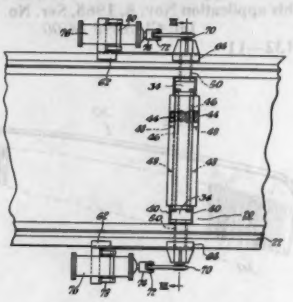
A portable dishwasher for use in a sink having an open meshwork basket adapted to be removably placed in a sink basin to hold dishes and other eating utensils, the basket being made from tubes having perforations to discharge jets of water during washing and rinsing operations. Water is supplied to the tubes by a hose connected to a faucet, and an inverted cup-shaped cover is placed over the basket and its contents to confine the water jets, this cover having a rim at its lower end resting on the bottom wall of the basin.

3,595,254

LIFTING APPARATUS

Ralph C. White, Bethel Park, and Robert N. Christian, McMurray, both of, Pa., assignors to The Bushnell Machinery Company, Pittsburgh, Pa.

Filed Nov. 5, 1969, Ser. No. 874,268
Int. Cl. B08b *13/00*
U.S. Cl. 134—122 13 Claims



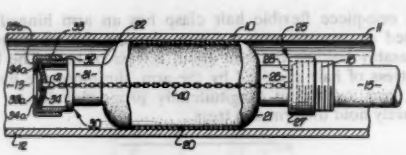
Lifting apparatus for a tank construction, said apparatus comprising a lifting arm shaped to conform substantially with adjacent surfaces of a bottom wall and at least one sidewall of said tank, a pivot shaft secured adjacent the upper end of said arm and passing transversely through said sidewall adjacent the upper edge thereof, and a pivot mechanism for angularly displacing said shaft, said mechanism being mounted on the outside of said tank adjacent said shaft and secured to an outer protruding end of said shaft, said arm being shaped to pass under an elongated member contained in said tank and to raise said member upon operation of said pivot mechanism to a level adjacent the top of said tank and above a level of treatment liquid contained in said tank.

3,595,255

HOSE ATTACHMENT FOR CLEANING CLOGGED DRAIN PIPES

Louis W. Mulinex, 6122 Woodward Ave., Maywood, Calif.

Filed Jan. 12, 1970, Ser. No. 2,334
Int. Cl. B08b *9/02*
U.S. Cl. 134—167 C 6 Claims

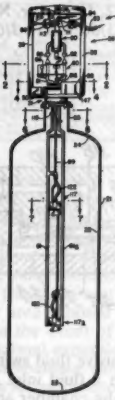


The disclosed device for attachment to the end of a water hose includes an inflatable tube having its near end connected to the hose end by an adapter, a restricted flow opening in the adapter, a fitting on the far end of the tubing section having an outlet valve opening, a moveable valve member captured within the fitting, and normally slack chain means interconnected between the valve member and the adapter and passing through the interior of the flexible tubing, the action of the device in response to water pressure being such that the tubing first inflates outwardly and then longitudinally until the tightening of the chain means causes the valve member to retract thus permitting water to escape from the outlet valve opening.

3,595,256
VESSEL-CLEANING APPARATUS

Robert E. Waltman; Charles A. Cook, and Carl R. Hillman, all of Baton Rouge, La., assignors to Ethyl Corporation, New York, N.Y.

Filed Nov. 22, 1968, Ser. No. 778,180
Int. Cl. B05b 3/12, 3/14; B08b 3/02
U.S. Cl. 134—167 12 Claims

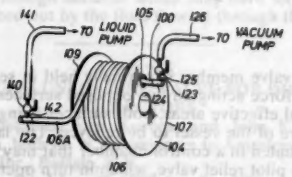


An apparatus for cleaning the interior walls of a vessel utilizing fluid under high pressure. The portion of the device carrying the fluid nozzle assembly is adapted to be inserted through an opening into the interior vessel. The apparatus may utilize one or more nozzle assemblies mounted on a support frame which is rotatable around the vertical axis of the vessel by a drive mechanism that remains outside of the vessel being cleaned. A support assembly has a fixed portion resting on the cleaning apparatus and permits rotation of the portion of the apparatus within the vessel that carries the high pressure nozzle assemblies. A reciprocating mechanism is carried by the rotating portion of the apparatus whereby the nozzle angle may be continually changed to provide movement of the nozzles about the radial axis of the vessel being cleaned. By simultaneous rotation of the nozzle assemblies around the axis of the vessel movement of the nozzle head through a radial arc, the high pressure fluid from the nozzles cleans the entire area of the vessel without excessive overlap. For elongated, cylindrical vessels, a plurality of nozzles are provided for cleaning the upper and lower half of the vessel, respectively. Such nozzles can be operated independently or simultaneously.

3,595,257
VACUUM FILLING PROCESS AND SYSTEM FOR LIQUID-FILLED MARINE SEISMIC CABLES

Richard L. McMahon, Burbank, Calif., assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed July 22, 1969, Ser. No. 843,499
Int. Cl. H01b 7/02
U.S. Cl. 137—1 3 Claims

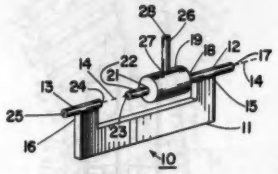


A technique for completely filling a multicompartmented marine seismic cable with a compatible filling liquid such as kerosene, wherein the air in a hollow cable on a spool is evacuated with a vacuum pump from one end of the cable while the liquid is pumped into the cable through the opposite end until it is full. Improved evacuation and filling means are also provided which prevent loss of vacuum during the filling process.

3,595,258
FLUIDIC GATE ELEMENT

Hans-Dieter Kinner, Attleboro, Mass., assignor to The Foxboro Company, Foxboro, Mass.

Filed Sept. 8, 1967, Ser. No. 666,340
Int. Cl. F15c 1/18
U.S. Cl. 137—81.5 3 Claims

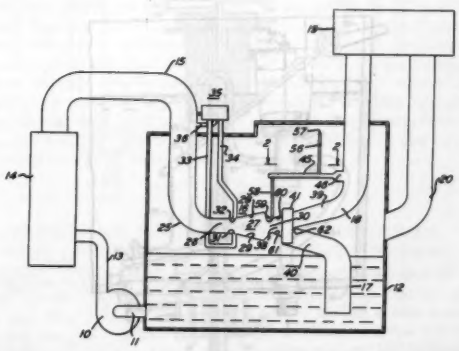


A fluidic gate has a first flow conduit communicating through a chamber to a second flow conduit, with both flow conduits being aligned on a common central axis and with each conduit being individually shorter than the length required for production of a laminar flow therethrough over the flow rates of interest, but said first and second flow conduits having a total serial length otherwise sufficient for production of a laminar flow; a control access communicates with said chamber; a receiver conduit is axially aligned downstream of the combination of chamber and conduits; over the flow rates of interest, a suitable control pressure supplied by means of said control access to said chamber operates to switch the projected flow from said conduit and chamber combination between laminar and turbulent conditions, thereby registering logical one and zero states respectively at said receiver conduit; generally, a specific range of positive control pressures produces a laminar condition of projected flow.

3,595,259
DIVERTING VALVE

Robert B. Adams, Tredyffrin Township, Chester County, Pa., assignor to Moore Products Co., Spring House, Pa.

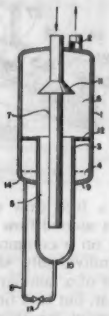
Filed July 29, 1969, Ser. No. 845,864
Int. Cl. F15c 3/00, 1/08
U.S. Cl. 137—81.5 13 Claims



A diverting valve is provided having no moving parts in contact with the fluid, and a temperature responsive pilot valve which determines proportioning of the flow between

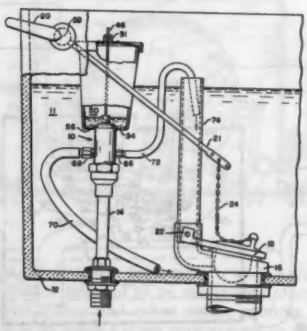
the two outlets of the diverting valve, and a fluidic pilot valve which operates to switch the flow away from one of the outlets when it decreases below a predetermined value in that outlet.

3,595,260
DIP PIPE UNIT FOR A FLARE SYSTEM
Winfried Lotzmann, Bad Hoenningen; Gunter Hein, Lechenich, and Helmut Possekel, Wesseling, Rhineland, all of, Germany, assignors to Shell Oil Company, New York, N.Y.
Filed Dec. 31, 1969, Ser. No. 889,428
Claims priority, application Germany, Jan. 3, 1969, P 19 00 272.3
Int. Cl. F16k *9/00*
U.S. Cl. 137—251 10 Claims



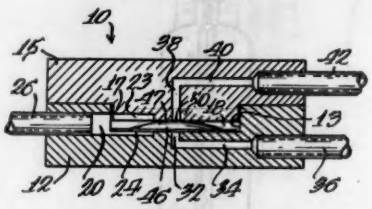
A dip pipe unit for a flare system comprising a normally closed hollow pressure vessel with a gas outlet disposed at the upper portion thereof and a partition dividing the interior of the lower portion into an inner and outer chamber, each of the chambers being open at the top and in communication with the interior of the inner chamber and the bottom of the inner chamber is substantially below the bottom of the outer chamber with a throttle line coupled to the bottom of both the inner and outer chambers for equalizing fluctuations in each of the inner and outer chambers.

3,595,261
AUTOMATIC SHUTOFF VALVE
Samuel Abbott, Glen Falls, N.Y., assignor to Venavco, Inc., Glen Falls, N.Y.
Filed Mar. 13, 1969, Ser. No. 806,816
Int. Cl. G05d *9/02*
U.S. Cl. 137—403 9 Claims



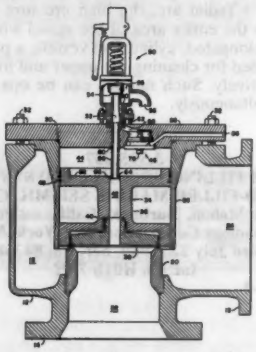
An automatic valve mechanism controls water flow into a toilet water closet or other environment in which liquid level control is desired. The valve mechanism responds to air pressure created under a diaphragm by a rising water level to shut off water flow into a water closet to attain a desired water level. The valve mechanism also responds to a decrease in air pressure under the diaphragm caused by a receding water level to allow water flow into the water closet to start again.

3,595,262
TEMPERATURE-RESPONSIVE SWITCH
Harold L. Fox, and Ruel R. Clark, both of Salt Lake City, Utah, assignors to I-T-E Imperial Corporation
Filed Aug. 12, 1968, Ser. No. 752,034
Int. Cl. F16k *25/00*; G01k *3/00*; F01p *5/14*
U.S. Cl. 137—457 8 Claims



A temperature-responsive fluid switch including a cylindrical valve chamber with a fluid inlet port for directing fluid generally radially into the chamber and opposed central outlet ports extending from the opposite ends of the chamber with a bimetallic disc extending across the chamber and selectively blocking the outlet ports to prevent fluid flow from the inlet port to one of the outlet ports while permitting flow to the other outlet port.

3,595,263
PILOT ACTUATED UNBALANCED PISTON RELIEF VALVE
Wilbert D. Greenlaw, Westwood, Mass., assignor to Crosby Valve & Gage Company, Wrentham, Mass.
Filed Dec. 26, 1968, Ser. No. 787,012
Int. Cl. F16k *17/10*
U.S. Cl. 137—491 18 Claims



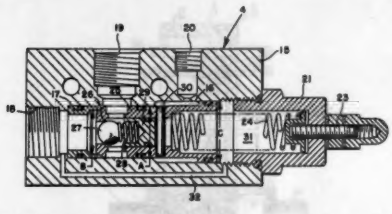
A relief valve member is normally held in seated position by the net force acting on two opposed surfaces thereof having unequal effective areas, both surfaces being subjected to the pressure of the vessel to be relieved. The larger of these areas is situated in a control chamber that may be vented by action of a pilot relief valve, which in turn operates a shuttle valve. The relief valve member has a passage connecting the vessel with the control chamber, this passage also continuously maintaining a control connection from the vessel to the pilot valve.

3,595,264

LOAD CONTROL AND HOLDING VALVE

George J. Martin, Lyndhurst, Ohio, assignor to Parker-Hannifin Corporation, Cleveland, Ohio

Filed Jan 9, 1970, Ser. No. 1,716
Int. Cl. F16k *17/18*
U.S. Cl. 137—493 10 Claims



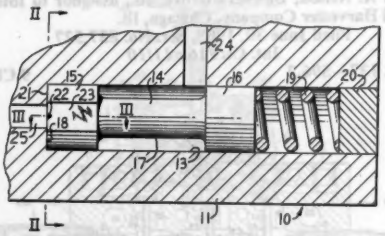
A load control and holding valve having a counterbalance valve with a check valve coaxially therewithin, both valves being closed to lock a fluid motor against downward drift of a load acting thereon. The counterbalance valve comprises a body having a stepped bore with a seat at its small end, and a stepped counterbalance valve member which is spring biased into engagement with the body seat and which has a first relatively small annular area exposed to motor load pressure to open said member in the event of overload due to shock load, load inertia, or thermal expansion of the fluid between the motor and the counterbalance valve. The counterbalance valve member also has a second relatively larger annular area which is exposed to pilot pressure derived from the pressure side of the motor to open the return side of the motor when the load is raised and to throttle or shut off the return side when the load tends to run ahead of the pump. The counterbalance valve member has, its small end, a check valve seat against which is seated a check valve member which permits flow to the motor when it is desired to reverse the direction of actuation of the motor.

3,595,265

SELF-CLEANING ORIFICE CHECK VALVE

John R. Cryder, and William B. Norick, both of Joliet, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Apr. 14, 1969, Ser. No. 815,545
Int. Cl. F16k *15/02, 21/02*
U.S. Cl. 137—513.5 1 Claim



A check valve that has an orifice formed by a groove in its face which communicates with the upstream and downstream sides of the valve so as to allow restricted flow through the valve when it is closed, and wherein upon opening of the check valve, foreign material which may have lodged in the orifice is flushed out by the fluid flowing through the valve.

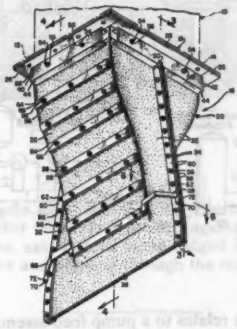
3,595,266

VACUUM UNLOADING VALVE FOR DUST COLLECTORS

Roger S. Brookman, East Aurora, and John F. Phillippi, Tonawanda, both of, N.Y., assignors to American Precision Industries, Inc., Buffalo, N.Y.

Filed Jan. 27, 1970, Ser. No. 108
Int. Cl. F16k *15/14*
U.S. Cl. 137—519 17 Claims

A vacuum unloading valve for dust collectors operating under negative pressure includes a hollow elongated metal valve body having a rectangular upper inlet end for direct attachment to the depending rectangular outlet end of the collector and an elongated elastomeric sleeve surrounding and supported internally by the body throughout the greater portion of its length. The valve body includes two pairs of opposite sides, each side of one pair being of horizontally elongated, rectangular outline and each side of the other pair being elongated vertically below each side of the one pair by opposite longitudinal edges converging downwardly along convex, then concave and finally convex exponential curves symmetrical about the central longitudinal axis of each side of the other pair and merging at their lower ends in a vertical plane common to such axes. The valve sleeve includes two



normally flat sheets extending around the one pair of sides onto the other pair and fitting tightly around the upper end of the valve body and loosely around the lower ends of the aforesaid edges to provide two pairs of side flaps joined at their outer margins along such axial plane but diverging downwardly from the other pair of sides and connected between such other sides by central flaps and below such edges by lower flaps. The valve also includes bars clamping the upper margins of the sleeve on the body, tying the outer margins of the side flaps together and reinforcing the central flaps, and hinge arms controlling the opening and closing of the valve sleeve which operates automatically in response to the negative operating pressure and weight of material collected.

3,595,267

LIQUID LEVEL CONTROL DEVICE

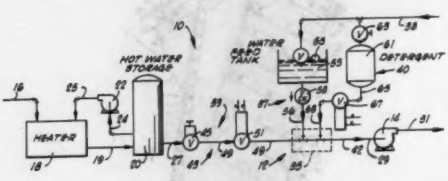
Howard L. Anderson, Wyandotte, Mich., assignor to Wyandotte Chemicals Corporation, Wyandotte, Mich.

Filed Mar. 17, 1969, Ser. No. 807,609
Int. Cl. G08b *21/00*
U.S. Cl. 137—558 3 Claims

A liquid level control device, adapted for use with apparatus for dispensing fluid from a reservoir to a drum or

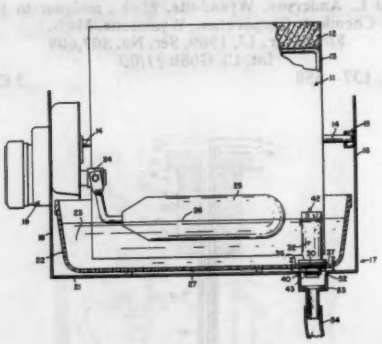
tank, that includes a conduit and an electrical relay encased in a tubular housing and disposed in the reservoir. The conduit is operable to deliver a stored fluid from the reservoir to the drum of a dispensing machine or the like and the relay is responsive to the level of liquid in the reservoir and connected to means for indicating when the liquid falls below a desired level.

3,595,268
PUMP FEED SYSTEM
Gary L. Archer, 418 S. Sheridan, Wichita, Kans.
Filed July 7, 1969, Ser. No. 839,380
Int. Cl. B60s 3/04
U.S. Cl. 137—565 **7 Claims**



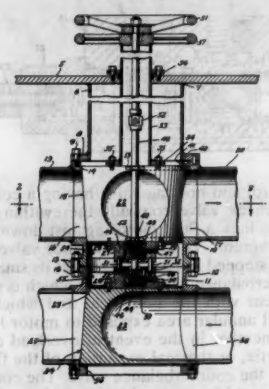
This invention relates to a pump feed assembly operable to selectively supply various mixtures through any given pump means for discharge therefrom but specifically beneficial in carwash systems. More particularly, this invention relates to a pump feed assembly having a mixing means interconnected to hot and cold fluid supply lines operable to supply a pump means through the mixing means at all times regardless of any mechanical or electrical failure.

3,595,269
DRAIN VALVE FOR HUMIDIFIER
Richard J. Yeagle, Hartland, Mich., assignor to Skuttle Mfg. Co., Milford, Mich.
Filed June 30, 1969, Ser. No. 837,624
Int. Cl. F24f 3/14
U.S. Cl. 137—577 **9 ~~10~~ Claims**



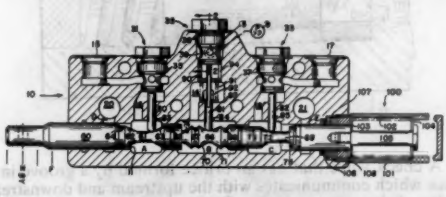
A combined drain and overflow valve assembly adapted for upright mounting in the water reservoir of a humidifier comprises a hollow casing having a lateral inlet port and a hollow core rotatably mounted in the casing. The core has a longitudinal passage open at both upper and lower ends for overflow discharge, and is formed with a small diameter drain port and a larger diameter flush port both intersecting that passage and adapted respectively to register with said inlet in different rotative positions of the core.

3,595,270
PLUG VALVE CONSTRUCTION AND OPERATING MECHANISM
Daniel R. McNeal, Jr., Gwynedd, Pa., assignor to Andale Company, Lansdale, Pa.
Filed Jan. 20, 1970, Ser. No. 4,297
Int. Cl. F16k 11/14, 5/16
U.S. Cl. 137—595 **15 Claims**



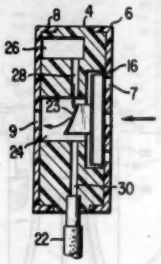
A duplex or double plug valve arrangement having two tapered valve plugs positioned on a common axis and adapted to seat in tapered valve cavities by axial movement in opposite directions. Each valve cavity is provided with three valve ports, two being positioned diametrically opposite to each other and the third midway between the first two. Valve seating mechanism is provided including means reacting against each valve plug to effect seating of the other valve plug. The port and the valve passage in at least one of the valve plugs are of the same circular cross section, such valve passage being in the form of the passage in a 90° pipe bend.

3,595,271
DIRECTIONAL FLOW CONTROL VALVE WITH FLOAT AND CHECK VALVE STRUCTURE
Vaughn A. Nelson, Downers Grove, Ill., assignor to International Harvester Company, Chicago, Ill.
Filed June 30, 1969, Ser. No. 837,527
Int. Cl. F16k 11/10
U.S. Cl. 137—596.2 **9 Claims**



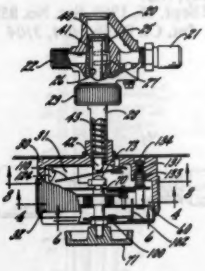
An improved directional flow control valve having a housing including an intake port, two motor ports adapted for connection to opposing sides of a hydraulic motor and an exhaust port for return of fluid from the hydraulic ram to the reservoir, the motor ports having check valve means interposed therein which normally preclude the return of fluid from said hydraulic ram to said valve housing, with control means within said valve housing for actuating the check valve means to selectively interconnect the intake port with either of the motor ports or to interconnect said motor parts with each other and the exhaust port to obtain a float condition within the hydraulic ram.

3,595,272
FLUID SWITCH
Clayton E. Conklin, El Paso, Tex., assignor to Automatic Systems of America, Inc., El Paso, Tex.
Filed Apr. 10, 1969, Ser. No. 815,122
Int. Cl. F16k *11/02*
U.S. Cl. 137—612 5 Claims



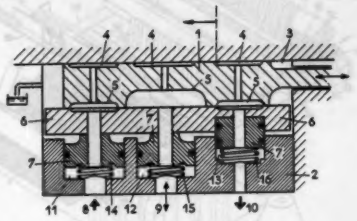
A fluid switch in which a fluid stream traversing an inlet and a first outlet is deflected by a vane, which pivots in response to impingement of an externally generated fluid flow, to switch the fluid stream to a second outlet. Upon cessation of the externally generated fluid, the fluid stream automatically returns the vane to its initial state, enabling the fluid stream to reenter the first outlet.

3,595,273
TIMER FOR RANGE TOP BURNER
Walter F. Kolodziej, La Salle, Ill., assignor to General Time Corporation, Stamford, Conn.
Filed July 16, 1969, Ser. No. 842,167
Int. Cl. F16k *21/06, 31/48*
U.S. Cl. 137—624.12 8 Claims



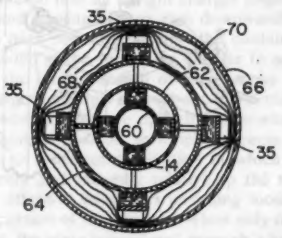
A timer for range top burner or the like having a throttle valve and a poppet valve in series with one another for cutting off the flow, the throttle valve having a rotating shaft and control knob and the poppet valve having a stem telescoped in the shaft and biased outwardly to a position of shut off. A timer assembly mounted on the knob has an axially extending main shaft with a dial at the outer end and a cam at the inner end. Adjacent the cam for acting upon the stem is a latchable member. Provision is made for axial movement of the cam, in the present instance by floatingly mounting the frame of the timer assembly, so that the gas is turned on (a) when the dial is pushed in to set the latch and (b) when the knob is turned. The dial is rotated to a set position and is timingly restored to its reference position whereupon the cam engages the latch to release the stem of the poppet to shut off further flow of gas.

3,595,274
REVERSE CYCLE VALVE
Jacques Faisandier, 32 Bld Felix Faure, 92 Chatillon-Sous-Bagneux, France
Filed Mar. 26, 1968, Ser. No. 716,047
Claims priority, application France, Apr. 7, 1967, 101,936
Int. Cl. F16k *11/06, 39/04*
U.S. Cl. 137—625.25 2 Claims



A reverse cycle valve having a flat internal chamber, the flat valve member of which is pressed against a port-forming plate by pistons, said pistons being lodged in the stationary part of the valve and pressing through the medium of a floating plate.

3,595,275
SPACER MEANS FOR CRYOGENIC COAXIAL TUBING
Thornton Steans, and Lewis B. Thompson, Jr., both of Winchester, Mass., assignors to Vacuum Barrier Corporation, Woburn, Mass.
Filed July 24, 1968, Ser. No. 747,134
Int. Cl. F16l *9/18*
U.S. Cl. 138—114 12 Claims

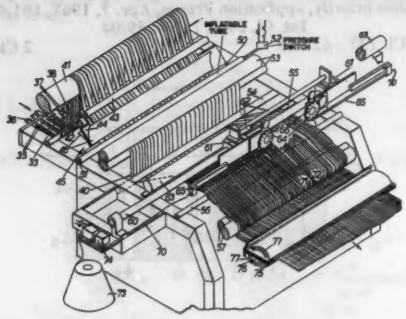


Spacer means for semiflexible coaxial tubing comprises a strip of fibrous thermal insulating material having an abrasive resistant facing or facings helically wound singly or doubly with opposite pitch around an inner tube. The spacer means may include a moisture impermeable package, enclosing getter particles, functioning as one or both of the facings after rupture to expose the particles. The spacer means is useful in coaxial tubing having evacuated annular spaces radially inwardly and radially outwardly of intermediate concentric tubing providing an annular concentric space for flow of fluid between said evacuated spaces.

3,595,276
METHOD AND APPARATUS FOR INTRODUCING A WEFT THREAD INTO A SHEET OF WARP THREADS
Andrzej Wrzesien, West Didsbury, England, assignor to Rolls-Royce Limited, Derby, Derbyshire, England
Filed Jan. 21, 1969, Ser. No. 792,646
Int. Cl. D03d *41/00, 47/00*
U.S. Cl. 139—11 11 Claims

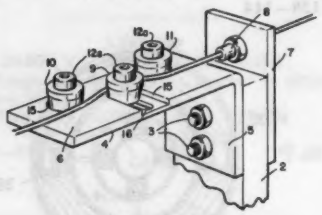
This invention concerns a method of introducing at least one weft thread into a sheet of warp threads so as to assist in holding the sheet together, the said method comprising employing at least one toothed wheel which is rolled transversely across the sheet periodically to raise and lower predeter-

mined warp threads in a sequence which permits the passage of the weft thread transversely of at least a part of the sheet,



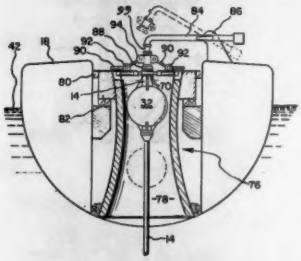
and introducing the said weft thread over and under the said predetermined warp threads.

3,595,277
WIRE STRAIGHTENER
Richard M. Lefever, Springettsbury Township, York County, Pa., assignor to The McKay Company, Pittsburgh, Pa.
Filed July 7, 1969, Ser. No. 839,347
Int. Cl. B21d *3/02*; B21f *1/02*; B21d *3/04*
U.S. Cl. 140—147 **13 Claims**



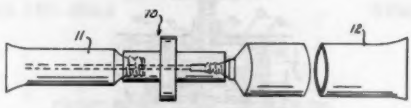
A wire straightener comprising a planar plate, means for drawing wire having a cast along and in contact with the planar plate and in a plane parallel to the plane of the planar plate and means engaging the wire in staggered positions at opposite sides as it is drawn along and in contact with the planar plate snugging the wire against the planar plate so that axial rotation of the wire is minimized and the wire is delivered from the straightener substantially straight and free from cast. Means may be provided for controlling orientation of the wire as it moves into contact with the planar plate so that its cast lies in said plane parallel to the plane of the planar plate. Wire may be fed from a coil whose axis is substantially normal to the plane of the planar plate whereby to control the orientation of the wire as it moves from the coil into contact with the planar plate so that its cast derived from coiling lies in said plane parallel to the plane of the planar plate. A turntable may carry the coil of wire, turning to pay out wire from the coil as the wire moves from the coil into contact with the planar plate. The wire-engaging means may be rotatable elements whose axes intersect the plane of the planar plate, such elements increasing in diameter from the planar plate outwardly, as conical rollers. Cylindrical rollers whose axes are inclined to the planar plate may be employed. Elements of the surfaces of the conical or cylindrical rollers make an angle of between about 45° and about 85° with the planar plate. Means may be provided for varying the distance between the rotatable elements at opposite sides of the wire to accommodate the straightener to wires of different casts or stiffness.

3,595,278
TRANSFER SYSTEM FOR SUBOCEANIC OIL PRODUCTION
Herbert J. Lilly, Jr., Mission Viejo, and Chris D. Dobler, Garden Grove, both of, Calif., assignors to North American Rockwell Corporation
Filed Sept. 11, 1969, Ser. No. 857,107
Int. Cl. B65b *1/04*, *3/04*
U.S. Cl. 141—1 **1 Claim**



A transfer system for offshore petroleum production has a vertically movable riser extending from a collection tank on the ocean floor to a storage on the ocean surface. The riser is releasably attachable by a pivotal connection to the tanker during flowing operation and disconnectable during storms or otherwise violent sea states. In the disconnected mode, the riser remains submerged under the ocean surface to avoid excessive structural loading. The riser is articulated and moored by a system of weights and floats to maintain tension within acceptable stress limits throughout a wide range of changes in vertical and some horizontal movement of the tanker.

3,595,279
TUBE FILLING ATTACHMENT FOR TRANSFER OF CONTENTS FROM ONE ELEMENT TO ANOTHER
David H. Jaffe, Scotch Plains, N.J., assignor to Head-to-Toe Products, Rahway, N.J.
Filed Sept. 16, 1969, Ser. No. 858,269
Int. Cl. B65b *1/04*, *3/04*
U.S. Cl. 141—2 **2 Claims**

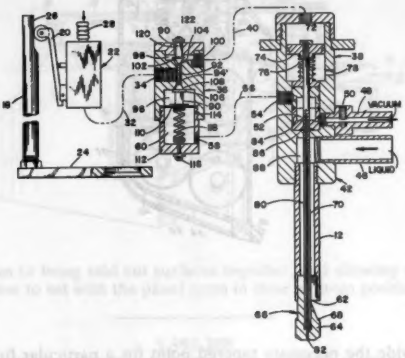


A method of recharging small empty portable collapsible tubes with a flowable liquid cosmetic, toilet preparation or medicinal good by means of a recharging fixture, to which the small tube is attached and a large stored fluid container is also attached to dispense sufficient quantities as desired.

3,595,280
AUTOMATIC FILLING VALVE
Thomas E. Fissel, Hanover, Pa., assignor to Chisholm-Ryder Company of Pennsylvania, Hanover, Pa.
Filed Aug. 1, 1969, Ser. No. 846,874
Int. Cl. B65b *3/26*
U.S. Cl. 141—40 **5 Claims**

An automatic-filling valve unit has a nozzle disposable within the neck of a container and a flow control valve is located on the lower end of said nozzle for quick shutoff. The valve is opened by air pressure and closed by a spring. Vacuum is drawn through the lower end of the nozzle constantly while filling of a container progresses and is interconnected to a control valve for the air pressure which operates

the flow control valve, whereby when liquid rising in the container reaches the suction inlet on the nozzle, the control



valve is actuated to release the air pressure instantly and permit the spring to close the flow control valve.

3,595,281

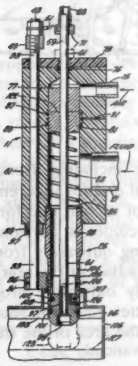
AUTOMATIC CONTAINER-FILLER VALVE

Herman Laub, III, 244 N. San Marino Ave., San Gabriel, Calif.

Continuation of application Ser. No. 566,906, July 18, 1966, now abandoned, which was a Continuation of application Ser. No. 809,472, Mar. 13, 1969, now abandoned. This application Ser. No. 876,209, Dec. 1, 1969

Int. Cl. B65b *31/06*

U.S. Cl. 141—46 **43 Claims**



An electromechanical apparatus is disclosed for filling containers and shutting off automatically when the container is filled. The valve does not seal on the container to be filled and has an air-operated slide tip that can move up and down and which moves up as the level of the fluid rises to a predetermined level. The valve dribble-finishes the fill, instead of snapping shut, and reopens to meter fill slowly at the end of the fill cycle, thereby eliminating error resulting from premature shutoff which is ordinarily caused by roiling fluid, entrained air or surface suds.

3,595,282

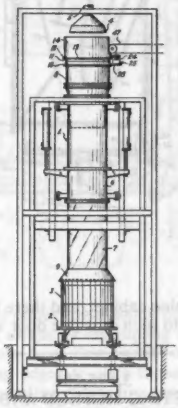
APPARATUS FOR COMPRESSING LOOSE MATERIAL INTO CONTAINERS

Francis B. Fishburne, and Clarence H. Hinnant, Jr., both of c/o Arnold Roylance Kruger and Duke, Suite 315, 1225 Connecticut Ave. N.W., Washington, D.C. 20036

Filed July 29, 1969, Ser. No. 845,746

Int. Cl. B65b *1/24*

U.S. Cl. 141—73 **13 Claims**



In apparatus for packing fragmentary compressible material, typically tobacco, into containers by delivering the loose fragmentary material into an upright charger disposed above the container and passing a press ram downwardly through the charger to pack the material into the container, a distributor is provided at the top of the charger to assure even distribution of the loose material throughout the cross section of the charger and thus throughout the container. The distributor includes at least one deflector plate which can be moved from a stowed position, in which the press ram is allowed to pass, to a deflecting position in which the plate slants downwardly and inwardly relative to the top of the charger and is effective to deflect incoming loose material across the top portion of the charger. When only one deflector plate is used, the plate is oscillated through a horizontally extending arcuate path at the top of the charger when the plate is in deflecting position. A plurality of plates arranged in a series about the top of the charger can be used, in which case the plates are actuated to deflecting position successively. Presentation of the deflecting plate in its deflecting position successively at a plurality of points spaced about the top of the charger achieves even distribution of the incoming loose material.

3,595,283

BEVERAGE MIXING AND DISPENSING MACHINE

Richard T. Cornelius, Minneapolis, and Irving Snyder, Anoka, both of, Minn., assignors to The Cornelius Company, Anoka, Minn.

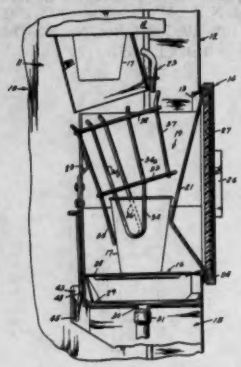
Filed May 15, 1968, Ser. No. 732,489

Int. Cl. B65b *3/04;* **B67d** *5/56*

U.S. Cl. 141—174 **17 Claims**

A method and apparatus for mixing and dispensing a beverage including the step of and means for discharging a liquid beverage ingredient through a downwardly sloping outlet into a cup to produce swirling therein, the step of and means for directing a second beverage ingredient downwardly onto the swirling first beverage ingredient beginning after a substantial amount of the first beverage ingredient has been dispensed and caused to swirl, cup-guide means for directing a cup to a predetermined position to

receive such beverage ingredients, such guide-means including a movable portion secured to a movable access door on the dispensing machine cabinet, and there being cup-supporting means adjacent to such movable door within the cabinet.



3,595,284

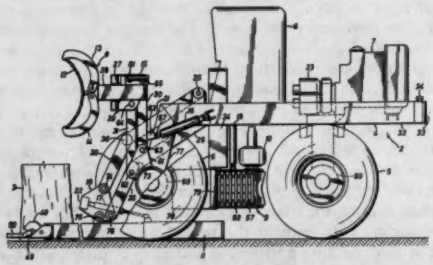
TREE HARVESTING METHOD AND APPARATUS

Adrian L. Landers, Many, La., assignor to A.D.C.O. Mfg. Co., Inc., Many, La.

Filed Oct. 21, 1968, Ser. No. 769,174

Int. Cl. A01g *23/02*

U.S. Cl. 144—2 Z **21 Claims**



An improved self-propelled, four-wheel tree harvester is disclosed having an improved delimber assembly mounted on its forward end, and having a gripping feedworks suspended beneath its chassis and between its wheels for pulling a felled tree through the delimber assembly. The harvester operates to shear off a standing tree at ground level in one shearing stroke. After the tree falls, the harvester straddles the trunk, grips the trunk with the feedworks and positions its delimbers about the trunk. Thereafter, the feedworks draws the felled tree through the delimber in one substantially continuous cycle of travel.

3,595,285

MOTORIZED DRAWING LEAD SHARPENER

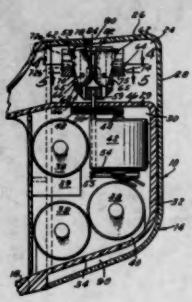
Raymond R. Ruben, 14600 Killion St., Van Nuys, Calif.

Filed May 8, 1969, Ser. No. 822,965

Int. Cl. B43l *23/02*

U.S. Cl. 144—28.5 **8 Claims**

A motorized drawing lead sharpener used in conjunction with mechanical type lead pencils, such as used by engineers and draftsmen. Said sharpener includes a cutting assembly, wherein the cutting blades of the assembly are adjustable to provide the necessary tapered point for a particular form of drafting. Said assembly is rotatably driven by a motor.



3,595,286

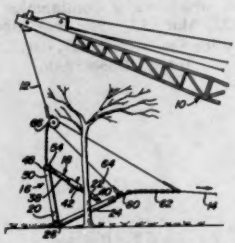
TREE CUTTING BLADE FOR DRAG LINES

Harold Phil Coffey, R.F.D. #4, Hickman, Ky.

Filed June 24, 1969, Ser. No. 835,922

Int. Cl. A01g *23/02*

U.S. Cl. 144—34 R **14 Claims**



An upright frame including front and rear ends and adapted at its forward end for securement to a drag line and at an upper portion of its rear end for attachment to a hoist cable. The frame includes a horizontal forwardly inclined cutter blade projecting outwardly from one side of a lower portion of the frame adjacent the rear end thereof as well as an upper horizontally outwardly projecting abutment arm spaced above the cutter blade for abutting a tree trunk portion disposed above the area of the tree trunk against which the cutter blade is advanced.

3,595,287

METHOD AND MACHINE FOR MANUFACTURING A BODY OR FRAME AND A MACHINE FOR MAKING MITRE CUTS ON PANEL-LIKE WORKPIECES

Hermann Indermark, Ahmser Strasse 6, 4901 Werl-Aspe, Lippe, Germany

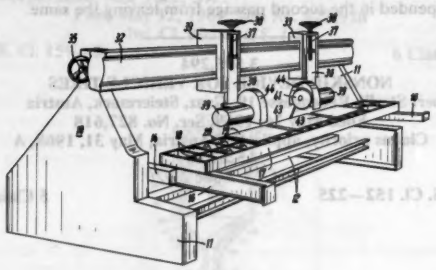
Filed Nov. 4, 1968, Ser. No. 772,968

Int. Cl. B27f *5/02*

U.S. Cl. 144—136 **7 Claims**

A method and machine for manufacturing a body for an article of furniture comprising the steps of coating one side of a panel with a finishing layer, cutting a plurality of mitre grooves on the other side, said grooves extending nearly

through said panel, applying an adhesive to the cut surfaces of said grooves, bending said panel along the lines of said



grooves to bring said cut surfaces together, and allowing said adhesive to set with the panel parts in their bent-up positions.

3,595,288

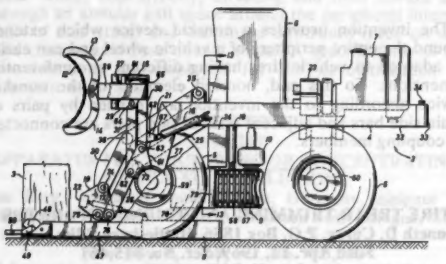
TREE HARVESTING METHOD AND APPARATUS

Adrian L. Landers, and Commodore B. Byrd, both of Many, La., assignors to ADCO Mfg. Co., Inc., Many, La.

Filed Oct. 21, 1968, Ser. No. 769,338

Int. Cl. A01g *23/02*

U.S. Cl. 144—309 **19 Claims**



An improved self-propelled, four-wheel tree harvester is disclosed having a shear knife assembly and delimber arms mounted on its forward end, and having a gripping feedworks suspended beneath its chassis and between its wheels. The harvester operates to shear off a standing tree at ground level in one shearing stroke. After the tree falls, the harvester straddles the trunk, grips the trunk with the feedworks, and positions its delimbers about the trunk. Thereafter, the feedworks draws the felled tree through the delimber in one substantially continuous cycle of travel. The shear knife is further arranged to be rotated to a vertical and downward cutting position to cut off the top or small end of the delimbed tree.

3,595,289

DRIVES AND DRIVE CONTROLS FOR CONVEYORS AND BEATERS ON FORAGE WAGONS

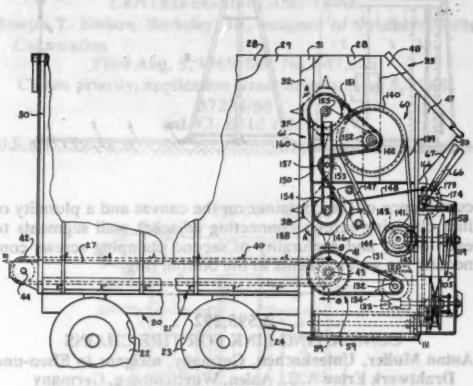
James G. Greiner, Leola, Pa., assignor to Sperry Rand Corporation, New Holland, Pa.

Filed Aug. 25, 1969, Ser. No. 852,842

Int. Cl. B60p *1/38;* **A01d** *55/18*

U.S. Cl. 146—119 **16 Claims**

The forage wagon has a main conveyor along the bottom that discharges cut crops either rearwardly through an end gate or forwardly onto a cross conveyor at the front for delivery of the cut crops to the left side of the wagon. Two input power takeoff shafts are mounted on the front of the wagon and are coupled by meshing spur gears for opposite rotation of the shafts. The power takeoff shaft is attached to one or the other depending on the desired direction of rotation of the main conveyor. The main conveyor is driven by the input shafts through a right connecting chain and sprocket drive, a belt and pulley variable speed drive, a worm box and a main chain and sprocket drive. The cross conveyor is driven by the input shafts through a separate left front chain and sprocket drive. The unloading beaters are driven from the right connecting chain and sprocket drive through a



decoupling belt and pulley drive which permits a gradual application of driving torque or decoupling of the beaters when desired. The beaters have thin radial stamped projections with narrow leading edges to slice through the discharging crop material. Decoupling means are provided to disconnect the cross conveyor when the main conveyor discharges to the rear.

3,595,290

APPARATUS FOR COMMINUTING GRAIN

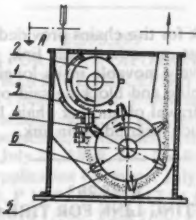
Toni Golubinov Tassev, Sofia, Bulgaria, assignor to DSP Bulet, Sofia, Bulgaria

Filed June 9, 1969, Ser. No. 831,468

Claims priority, application Bulgaria, June 11, 1968, 10114

Int. Cl. B02b *3/08;* **B02c** *13/09*

U.S. Cl. 146—123 **2 Claims**



Am apparatus for comminuting grain in which a feed rotor entrains the grain along its underside and propels the grain at high velocity against blades rotated in the opposite direction on a comminuter rotor which cooperates with fixed teeth attached to the housing walls.

3,595,291

RESILIENT SECTIONAL STORAGE TANK

Heinrich Grunhoff, Unna-Konigsborn; Werner Schulz, Kaarst, and Josef Reisdorf, Frondenberg-Langschede, all of, Germany, assignors to Thyssen Industrie GmbH, Dusseldorf, Germany

Filed Nov. 12, 1969, Ser. No. 875,951

Claims priority, application Germany, Nov. 11, 1968

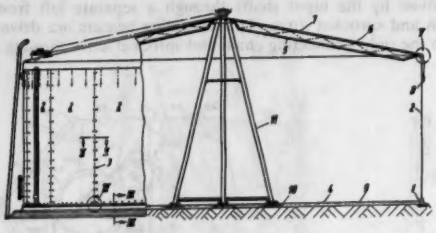
P 18 08 878.3

Int. Cl. A45c *00;* **B65d** *00, 7/02*

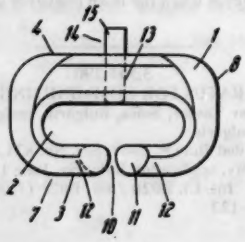
U.S. Cl. 150—.5 **6 Claims**

A container, especially storage tank, comprising a bottom ring for placement on the ground and including a plurality of

interconnected bottom ring segments, a canvas placed on said bottom ring and forming the floor of the container, a plurality of wall segments placed side by side around the circumference of the container on the canvas and a plurality of first clamping screws connecting adjacent wall segments to each other, and a plurality of second clamping screws connecting the wall segments to the bottom ring.

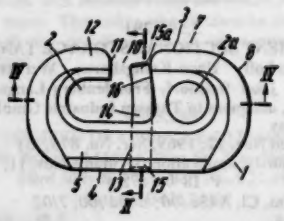


3,595,292
CONNECTING LINK FOR TIRE CHAINS
Anton Muller, Unterkochen, Germany, assignor to Eisen-und Drahtwerk Erlau A.G., Aalen, Wurttemberg, Germany
Filed Mar. 21, 1968, Ser. No. 715,007
Claims priority, application Germany, Mar. 23, 1967, E 33671
Int. Cl. B60c *11/00*
U.S. Cl. 152—243 **13 Claims**



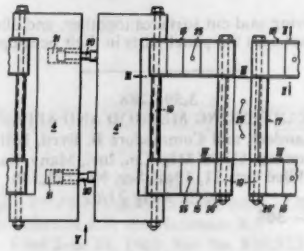
A connecting link for tire chains provided with an opening for receiving at least one other chain link, which includes a closing bolt selectively movable in its longitudinal direction for selectively opening and blocking said opening to permit insertion and withdrawal of another chain link and preventing withdrawal of such inserted chain link.

3,595,293
CONNECTING LINK FOR TIRE CHAIN
Anton Muller, Unterkochen, Germany, assignor to Eisen - und Drahtwerk Erlau AG., Aalen, Wurttemberg, Germany
Filed May 16, 1969, Ser. No. 825,263
Claims priority, application Germany, Mar. 31, 1968, P 17 55 623.9
Int. Cl. B60c *27/04*
U.S. Cl. 152—243 **14 Claims**



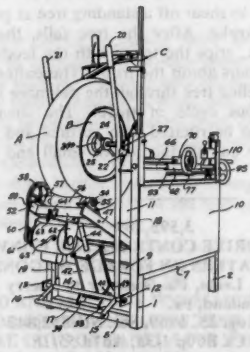
A web-shaped longitudinal connecting link for tire chains with a circumferentially closed transverse first passage and with a second transverse passage communicating with the outside through an opening while a pin supported by the link is selectively movable in said opening to thereby reduce the free inner cross section of the opening so as to prevent a link suspended in the second passage from leaving the same.

3,595,294
NONSKID DEVICE FOR VEHICLE TIRES
Albert Strelli, Rebengasse 19, Graz, Steiermark, Austria
Filed May 26, 1969, Ser. No. 827,618
Claims priority, application Austria, May 31, 1968, A A5257/68
Int. Cl. B60c *27/20*
U.S. Cl. 152—225 **5 Claims**



The invention provides a nonskid device which extends around the entire periphery of a vehicle wheel and can easily be adapted to vehicle tires having different circumferential dimensions. To this end, nonskid elements of the nonskid device according to the invention are carried by pairs of chain side bars and adjacent ones of said pairs are connected by coupling members.

3,595,295
TIRE TREAD TRIMMING AND TRUING APPARATUS
Kenneth D. Curry, P.O. Box 1856, Hattiesburg, Miss.
Filed Apr. 11, 1969, Ser. No. 815,461
Int. Cl. B29h *21/08*
U.S. Cl. 157—13 **7 Claims**



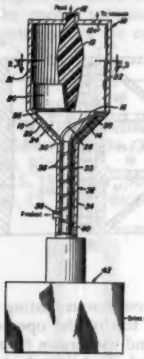
The apparatus is for rounding the tread of tires to give the tread a perfect annular configuration as well as a lateral arc which is the same entirely around the tread of the tire and includes a tire loading and unloading means, a tire-rotating and tread-flexing means for both flexing the tire before trimming and rotating the tire during trimming and guided means for trimming the tire tread to the desired configuration.

3,595,296

APPARATUS FOR FLASH EVAPORATING, FILMING AND EXTRUDING VISCOELASTIC MATERIAL

James R. Fisher, Piscataway, N.J., assignor to Union Carbide Corporation, New York, N.Y.

Filed May 12, 1969, Ser. No. 823,928
Int. Cl. B01d *1/28, 1/22*
U.S. Cl. 159—2 6 Claims



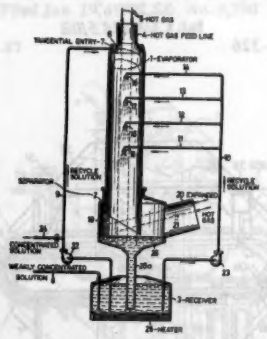
Apparatus for evacuating viscoelastic fluids from a cylindrical vessel comprising rotating said fluid at the base of said vessel while, concurrently, directing said fluid toward and through an annular exit space around the peripheral internal walls of said vessel and exerting a downward force on said fluid contact said base of said vessel. A specific form of the invention may be employed for the devolatilization of polymeric materials.

3,595,297

APPARATUS FOR THICKENING OR CONCENTRATING HIGHLY FLUID SOLUTIONS

Leo Berg, Alstadten near Cologne, Germany, assignor to Knapsack Aktiengesellschaft, Knapsack near Cologne, Germany

Filed Nov. 5, 1968, Ser. No. 773,583
Claims priority, application Germany, Dec. 20, 1967, P 16 19 711.8
Int. Cl. B01d *1/16, 1/22*
U.S. Cl. 159—4 R 2 Claims



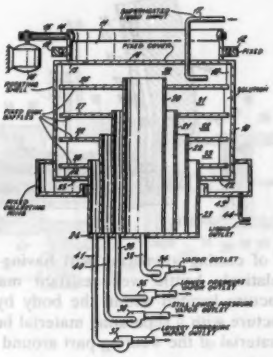
hot concentrated solutions, for example salt solutions, are thickened or concentrated in an apparatus comprising a tubular evaporator, a hot gas feedline, which is arranged to project into the evaporator, and a separator, which is arranged downstream of and connected to the evaporator, wherein the separator is arranged so as to continuously communicate through a connecting line with a receiver, which has a solution feedline and a number of pipelines attached thereto for connecting the said receiver to the tubular evaporator.

3,595,298

CENTRIFUGAL FLASH TANK

Joseph T. Enders, Berkeley, Ill., assignor to Struthers Wells Corporation

Filed Aug. 5, 1969, Ser. No. 847,646
Claims priority, application Great Britain, Aug. 5, 1968, 37254/68
Int. Cl. B01d *1/22*
U.S. Cl. 159—6 R 5 Claims



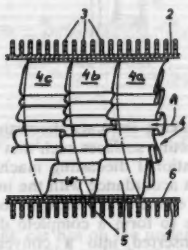
A flash tank for a superheated liquid has a rotated cylindrical shell divided into longitudinal compartments by transverse stationary partitions which extend into liquid introduced into the shell, the compartments being successively evacuated to a greater extent to successively flash the liquid to a vapor as it flows from one compartment to another under centrifugal force.

3,595,299

APPARATUS FOR THE EVAPORATION OF LOW-TEMPERATURE LIQUEFIED GASES

Josef Weishaupt, Pullach; Hans Waldman, Wolfratshausen, and Thomas Haring, Icking, all of, Germany, assignors to Linde Aktiengesellschaft, Wiesbaden, Germany

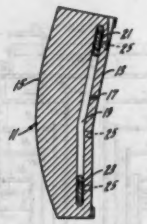
Filed July 28, 1969, Ser. No. 845,399
Claims priority, application Germany, July 29, 1968, Sept. 9, 1968, P 17 51 779.2;P 17 76 041.7
Int. Cl. B01d *1/100;* F28f *1/00;* F28d *7/10*
U.S. Cl. 159—28 D 13 Claims



An apparatus for the evaporation of low-temperature liquefied gases which comprises a tube bundle immersed in a water bath which may be heated by steam. The tubes of the

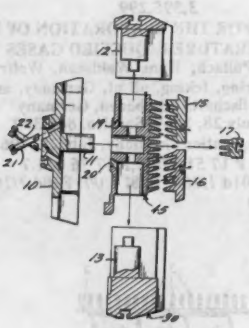
bundle each contain a plurality of turbulence-inducing baffles which are soldered or welded to the inner surface of the tube and are of plane undulating, zigzag or coiled configuration. Successive baffles may be angularly offset about the axis of the tube from one another.

3,595,300
METHOD OF CASTING WEARING PART HAVING RETAINING STRUCTURE
Edwin S. Long, New Berlin, Wis., assignor to Nordberg Manufacturing Company, Milwaukee, Wis.
Filed Aug. 21, 1969, Ser. No. 852,036
Int. Cl. B22d *19/02*
U.S. Cl. 164—75 **3 Claims**



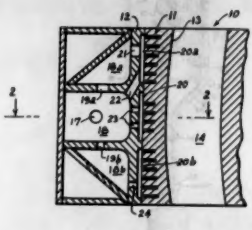
A method of casting a wearing part having a body of a hard and relatively brittle wear-resistant material and a retaining structure located within the body by coating the retaining structure with a separating material before pouring the molten material of the wearing part around the retaining structure.

3,595,301
METHOD OF MAKING INTRICATE DIE CASTINGS
Alfred F. Bauer, Toledo, Ohio, assignor to National Lead Company, New York, N.Y.
Filed Dec. 26, 1968, Ser. No. 787,118
Int. Cl. B22d *27/10, 33/04*
U.S. Cl. 164—113 **4 Claims**



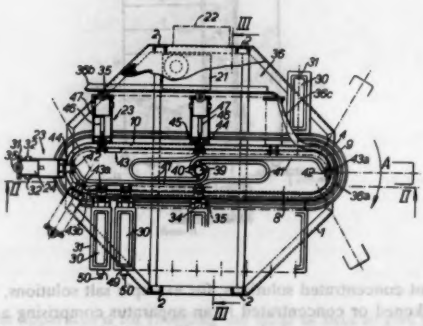
A method of making intricate diecastings that have undercuts and intersecting surfaces such that removal of a casting from a conventional diecasting machine would be extremely difficult. In accordance with the invention, a plurality of separable die elements are brought together outside the diecasting machine to form a complete die cavity. The assembled die is inserted into a conventional diecasting machine, the shot made, and the die, with the casting therein removed as a unit. The die parts are disassembled from the casting outside the machine. Each or all of the die parts may be lubricated and brought to a predetermined temperature prior to reassembly.

3,595,302
COOLING STRUCTURE FOR CONTINUOUS-CASTING MOLD
Paul Mallener, Dusseldorf, Germany, assignor to Schloemann Aktiengesellschaft, Dusseldorf, Germany
Filed May 13, 1968, Ser. No. 728,732
Claims priority, application Germany, May 11, 1967, P 15 58 312.7
Int. Cl. B22d *11/00*
U.S. Cl. 164—283 **9 Claims**



In an open-ended continuous-casting mold in which molten metal poured in the top of the open-ended mold cavity is cooled by the mold and withdrawn from the bottom as a partially solidified strand, and in which the mold cavity is defined by the face surfaces of mold plates attached to backing plates, structure for cooling the mold comprises ducts for cooling fluid integral with the mold plates. The ducts are formed at the interface between the backing plates and the mold plates, the cross-sectional dimensions of the ducts, their arrangement, and the thicknesses through the walls of the mold plates from the ducts to the face surfaces of the mold plates being such that fluid flowing through the ducts abstracts more heat in a given time from the upper portions of the mold cavity than from its lower portions. In molds for casting slabs having elongated, generally rectangular cross sections the thickness of the mold plate walls, between the ducts and the face surfaces of the mold plates, are less at their central portions than at their side edge portions, so that the cooling fluid will abstract more heat from the central portions of the elongated sides of the mold cavity than from the end portions of said sides.

3,595,303
APPARATUS FOR CASTING MOLTEN SUBSTANCES
Eric J. Ponting, 167 Tamworth Road, Sutton Coldfield, Warwickshire, England
Filed Nov. 14, 1968, Ser. No. 775,755
Claims priority, application Great Britain, Nov. 16, 1967, 52,209/67
Int. Cl. B22d *5/02*
U.S. Cl. 164—326 **10 Claims**



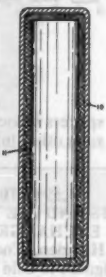
In apparatus for casting molten substances, a battery of molds is carried upon and around the exterior of a horizontal

endless conveyor, each mold is so pivoted within a carriage connected to at least one endless chain incorporated in the conveyor, that it tends to tilt from the horizontal to the vertical, and means are provided whereby, when the apparatus is being operated, coolant liquid is sprayed continuously on to the external surface of the molds and, as each carriage is conveyed from a pouring station where a quantity of molten substance is charged into the mold pivoted therein, the mold is held in the horizontal until the substance is at least partially solidified, whereupon the mold is permitted to turn to the vertical to strip the cooled substance therefrom, and is returned to the horizontal before the carriage is returned to the pouring station.

3,595,304
ORGANIC FLUIDS FOR HEAT PIPES

Kenneth L. McHugh, Kirkwood, Mo., assignor to Monsanto Company, Saint Louis, Mo.

Filed Sept. 15, 1967, Ser. No. 667,970
Int. Cl. F28d *15/00*
U.S. Cl. 165—1 **2 Claims**

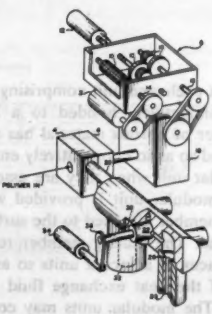


Certain aromatic and aliphatic organic compounds are disclosed as working fluids for heat pipes, thus affording improved operation in the temperature range from about −40° C. to about 500° C. These fluids have critical temperatures in excess of 300° C., kinematic viscosities less than 500 centistrokes at 0° C., and the numerical product of surface tension and latent heat of vaporization is greater than 2500 dyne-calories per gram-centimeter.

3,595,305
MELT RHEOMETER

Richard O. Welty, and Floyd H. McGinnis, Tulsa, both of, Okla., assignors to Phillips Petroleum Company

Filed Jan. 19, 1970, Ser. No. 3,790
Int. Cl. F24h *3/00*
U.S. Cl. 165—47 **5 Claims**

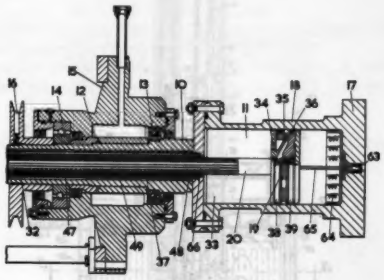


An improved melt rheometer having a power transmission, a plurality of orifice elements, and an improved heater block for increasing the operating range and accuracy of the apparatus.

3,595,306
TEMPERATURE CONTROL DEVICES

Robert Lewis Bickerdike, Clays Farm, East Worldham, Alton Hampshire; John Gwynne Davies, 38 Church Hill Crescent Hawley Lane Estate, Farnborough; William Norman Mair, Flyingdales, Upper Old Park Lane, Farnham, Surrey, and Allen Benjamin Osborn, 26 Napoleon Ave., Farnborough, all of, England

Filed July 24, 1969, Ser. No. 844,534
Claims priority, application Great Britain, July 26, 1968, 35,729/68
Int. Cl. F24h *3/00*
U.S. Cl. 165—47 **7 Claims**

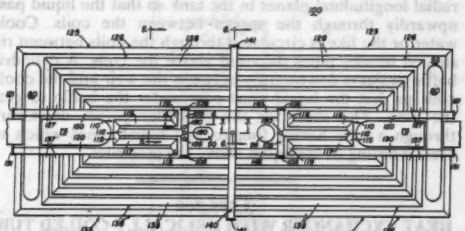


A temperature control device for a body comprises a member which includes a tube integral with or in efficient thermal contact with the body, a piston within the tube and means whereby its position therein may be controlled, and means for introducing heat exchange medium into the tube on the side of the piston remote from the body and means for removing it therefrom. Advantageously the heat exchange medium passes through the piston during its circulation and is brought into intimate contact with the wall of the tube. The device described is particularly applicable to bodies the temperature of which has to be controlled during rotation.

3,595,307
STORAGE TANK HEATING ARRANGEMENT

Erling Mowatt-Larssen, Warren, Ohio, and William A. Taylor, Sharpsville, Pa., assignors to General American Transportation Corporation, Chicago, Ill.

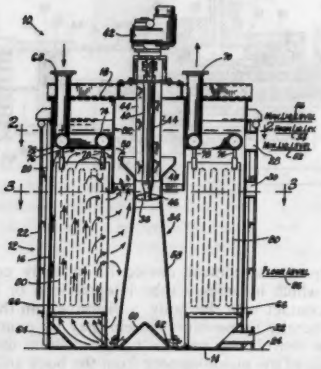
Filed Sept. 17, 1969, Ser. No. 858,794
Int. Cl. F24h *7/02*
U.S. Cl. 165—47 **20 Claims**



A cylindrical tank car has on the underside thereof a centrally disposed lading outlet and a heating arrangement which comprises an input manifold assembly extending longitudinally the length of the tank bottom and including a central rectangular input section circumscribing the lading outlet, two intermediate sinuous coil sections respectively communicating with opposite ends of the rectangular section, and

two end manifold sections, a circumferentially extending output manifold midway between the tank ends cooperating with the input manifold assembly to divide the tank bottom into four areas, each area having a group of heating coils communicating with the adjacent input manifold section and with the output manifold; heating fluid is supplied to the rectangular input section and withdrawn from the output manifold.

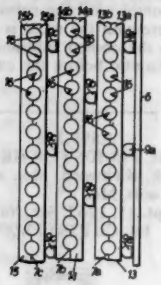
3,595,308
APPARATUS FOR COOLING LIQUIDS
Lewis H. Durbin, P.O. Box 1148, Birmingham, Ala.
Filed Aug. 1, 1969, Ser. No. 846,748
Int. Cl. F28f *13/06*
U.S. Cl. 165—107 **6 Claims**



The cooling apparatus is especially advantageous for cooling hot viscous liquids such as hot phosphoric acid. The liquid is contained in a generally cylindrical tank having an axial down draft tube with a pumping propeller therein. The liquid passes over a circular weir at the upper end of the tube and is pumped downwardly by the propeller. At the lower end of the tube, the liquid is deflected outwardly in all radial directions by a generally conical deflector. The liquid is then deflected upwardly by a frustoconical or parabolic deflector. A large number of cooling coils or plates are positioned in radial longitudinal planes in the tank so that the liquid passes upwardly through the spaces between the coils. Cooling water or the like is circulated through the coils between ring-shaped header pipes disposed above the coils. A cylindrical baffle projects downwardly between the weir and the cooling coils so that the liquid must pass under the baffle to get to the weir. The shaft for the propeller passes downwardly through a tube having longitudinal radial vanes which suppress whirling of the liquid above the propeller.

3,595,309
HEAT EXCHANGER WITH HELICALLY COILED TUBES
Ronald J. Hawkins, Morden, Surrey, England, assignor to Babcock & Wilcox, Limited, London, England
Filed July 30, 1969, Ser. No. 846,095
Claims priority, application Great Britain, July 31, 1968, 36565/68
Int. Cl. F28d *7/02*; F28f *9/00*
U.S. Cl. 165—162 **7 Claims**

A heat exchanger in which a plurality of helically coiled heat exchanger tubes are arranged in concentric relation to one another and the radial spacing between each pair of adjacent tube coils is established by radially projecting spacers connected to interconvolution spacers associated with one tube coil of the pair, and disposed for abutting engagement



with interconvolution spacers associated with the other tube coil of the pair and/or such other tube coil itself.

3,595,310
MODULAR UNITS AND USE THEREOF IN HEAT EXCHANGERS
Frederick A. Burne, Hamden, Conn., and Emery I. Valyi, Riverdale, N.Y., assignors to Olin Corporation
Continuation-in-part of application Ser. No. 723,339, Dec. 18, 1967, now Patent No. 3,493,042, dated Feb. 3, 1970, which is a Division of Ser. No. 629,954, Apr. 11, 1967, Pat. No. 3,415,316.
Filed Nov. 12, 1969, Ser. No. 875,661
Int. Cl. F28f *1/22*
U.S. Cl. 165—181 **7 Claims**

A modular heat exchange unit comprising at least one impervious tube conductively bonded to a layer of porous material. The layer of porous material has an outer surface which is contoured so as to cooperatively engage at least one other such modular unit when they are assembled in a heat exchanger. The modular unit is provided with at least one resilient sealing member attached to the surface of said layer of porous material. The sealing member resiliently engages the abutting surfaces of adjacent units so as to substantially reduce bypass of the heat exchange fluid in an assembled heat exchanger. The modular units may contain more than one impervious tube, and the tubes may extend beyond the layer of porous material. In other embodiments, the layer of porous material may be shaped to fit adjacent a tubular wall, the impervious tubes may extend to at least one surface of the unit, the sealing members may be hollow or the unit may have at least one fin.

3,595,311

CONNECTING UNIT FOR THE COMPLETION EQUIPMENT OF A PRODUCING UNDERWATER WELL

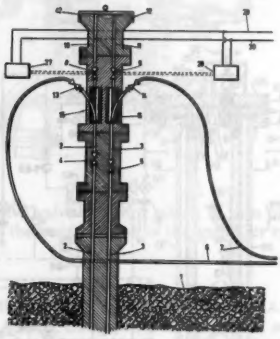
Jacques Harbonn, Jouars Ponchartrain, and Andre Castela, Mesnil le Roi, both of, France, assignors to Institut Francais du Petrole Des Carburants Et Lubrifiants

Continuation-in-part of application Ser. No. 698,605, Jan. 17, 1968, now abandoned. This application Apr. 14, 1969, Ser. No. 815,685

Claims priority, application France, Jan. 19, 1967, 91850

Int. Cl. E21b *33/035*

U.S. Cl. 166—.5 8 Claims



A connecting unit located between each production tubing and the associated head valve and wing flow line, this unit being provided with a housing whereinto open through separate apertures the tubing, the head valve and the flow line and which contains a rotatable element.

This element is provided with a first duct adapted to connect the tubing with the flow line in a first position of the rotatable element and a second duct adapted to connect the tubing with the head valve in a second position of the rotatable element.

3,595,312

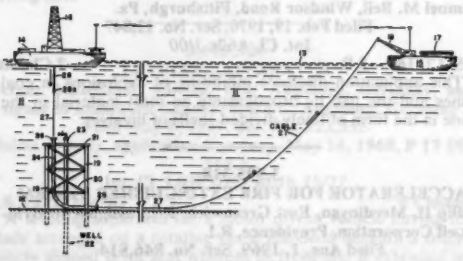
METHOD AND APPARATUS FOR INSTALLING OFFSHORE FLOW LINES

Jamie F. Matthews, Jr., Houston, Tex., assignor to Esso Production Research Company

Continuation-in-part of application Ser. No. 797,749, Feb. 10, 1969, now abandoned. This application Sept. 18, 1969, Ser. No. 859,055

Int. Cl. E21b *43/01*; F16l *1/00*

U.S. Cl. 166—.5 37 Claims



Offshore flow lines are installed on an offshore structure in a body of water by pulling (and/or pushing) a flow line downwardly from water surface through a curved tubular member until one end of the flow line is available to water surface at a horizontally spaced-apart point from said structure. The flow line may be arranged in the curved tubular member when the offshore structure is built and the flow line pulled and/or pushed through it when the structure is located in a vertical position in a body of water.

3,595,313

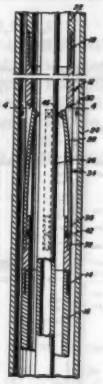
TUBE CUTTING TOOL

Claude W. Gray, c/o O.K. Fishing & Rental Inc., P.O. Box 10131, Houma, La.

Filed May 12, 1970, Ser. No. 36,578

Int. Cl. E21b *29/00*

U.S. Cl. 166—*55.6* 10 Claims



A cutting tool is lowered into a well bore over a string of tubes to cut the tubing at any desired depth by rotation of the tool body. Spring blades anchored to the tool body at their lower ends, project through openings into the body and mount cutting tips at the upper ends engageable with the tubing.

3,595,314

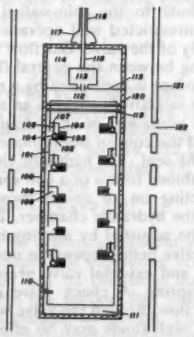
APPARATUS FOR SELECTIVELY PLUGGING PORTIONS OF A PERFORATED ZONE

Charles Robert Garner, Tulsa, Okla., assignor to Cities Service Oil Company

Filed June 2, 1970, Ser. No. 42,785

Int. Cl. E21b *33/13*

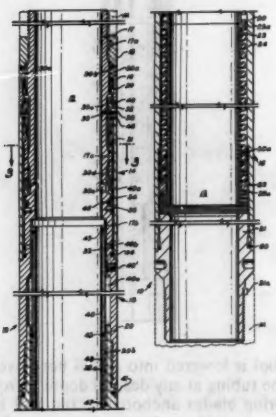
U.S. Cl. 166—192 10 Claims



Wellbore apparatus having perforation ball sealers attached thereto and properly spaced along the length of the tool is positioned in a perforated wellbore liner. The wellbore apparatus is positioned so that ball sealers are adjacent to the

perforations through which fluid is not desired. When fluid is pumped down the wellbore, the ball sealers are forced to enter the desired portion of the perforated wellbore liner. The apparatus provides a means for selectively plugging an interval of a perforated wellbore liner while allowing fluid to flow in other zones of the wellbore.

3,595,315
GAS LIFT VALVE
Thomas R. Alley, 4002 Fulton, Houston, Tex.
Filed Jan. 19, 1970, Ser. No. 3,993
Int. Cl. E21b *33/00*; F04f *1/08*
U.S. Cl. 166—224 **17 Claims**



A gas injection valve having a thin-wall, annular valve cage with the operative valve components formed in the valve wall. In the concentric form of the valve, the central flow passage of the valve is coaxial with the central flow passage of a conventional tubing string and has approximately the same internal diameter as the tubing in the string. The external diameter of the valve corresponds substantially to that of a conventional connecting coupler employed in a tubing string to contribute to the thin-walled valve construction which permits unrestricted well operations conducted internally or externally of the valve. Gas flow through an injection passage extending between the central flow passage and the external valve surface is controlled by a resilient tubular control sleeve which selectively engages an annular valve seat. A pressurized fluid contained in an hydraulic linkage chamber extending behind the control sleeve biases the sleeve into engagement with the seat. The hydraulic fluid pressure is regulated by the combined forces of a coil spring and pressure induced forces acting on an axially movable tubular piston forming part of the hydraulic chamber. The force exerted by the spring may be adjusted by altering its compression with opening of the valve being dependent upon the combined effects of internal and external valve pressures, and the force exerted by the spring. A check valve in the flow passage prevents reverse flow through the valve wall.

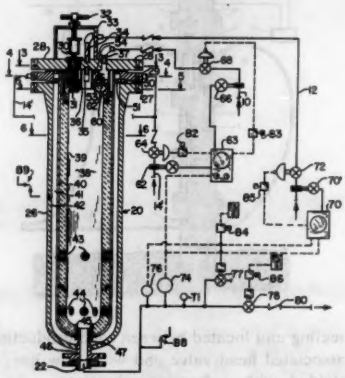
Production of well fluids may be effected either through the associated production tubing or, by appropriate modification, the production tubing may be employed to supply lift gas for production through another conduit such as the well casing.

The tool may be modified for side mounting externally of a tubing string.

ERRATUM

For Class 166—292 see:
Patent No. 3,595,642

3,595,316
AGGREGATE PROCESS FOR PETROLEUM PRODUCTION
Walter A. Myrick, III, 653 Evergreen, Borger, Tex.
Filed May 19, 1969, Ser. No. 825,671
Int. Cl. E21b *43/24*
U.S. Cl. 166—303 **10 Claims**



Water, hydrocarbons, and air are reacted together within a catalytic chamber to provide high temperatures, high-pressure products of reaction having increased percentage composition of hydrogen and carbon dioxide therein. A catalyst in the form of an alkali metal oxide or an alkaline earth metal oxide is carried to the reaction zone in the water stream, thereby providing the additional function of treating the water. The high temperature oxygen free gases are injected into a reservoir and contact the oil bearing formation thereof to increase the production of crude therefrom.

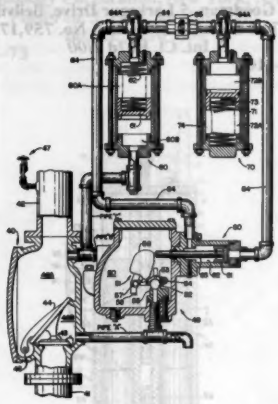
3,595,317
INHIBITING EXPLOSIONS IN COAL MINES AND THE LIKE
Samuel M. Bell, Windsor Road, Pittsburgh, Pa.
Filed Feb. 19, 1970, Ser. No. 12,847
Int. Cl. A62c *3/00*
U.S. Cl. 169—2 R **7 Claims**

This application discloses inhibiting of explosions in coal mines and the like by broadcasting an inert material in the mine in the form of finely divided shells of bivalves.

3,595,318
ACCELERATOR FOR FIRE EXTINGUISHER SYSTEM
Philip H. Merdinyan, East Greenwich, R.I., assignor to Grinnell Corporation, Providence, R.I.
Filed Aug. 1, 1969, Ser. No. 846,814
Int. Cl. A62c *35/00*
U.S. Cl. 169—17 **13 Claims**

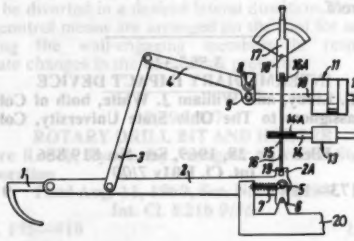
A dry pipe valve accelerator device for a sprinkler system wherein a portion of the accelerator system sensitive to the opening of one or more of the sprinkler valves is isolated from the water supply. In particular, the air pressure in the sprinkler system is continuously monitored by a differential

pressure chamber such that a recognition of lowering of air pressure in the piping causes the actuation of a differential



pressure responsive valve actuator which in turn permits the rapid opening of the control valve of the sprinkler system.

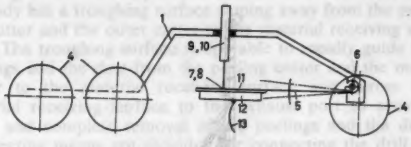
3,595,319
IMPLEMENT CARRYING LINKAGE MEANS
Frederick John Adams, Campton, Beds, England, assignor to Cam Gears (Luton) Limited, Luton, Bedfordshire, England
Filed Aug. 14, 1968, Ser. No. 752,577
Int. Cl. A01b *63/112, 63/114*
U.S. Cl. 172—9 **7 Claims**



A three-point linkage for an implement-carrying tractor has one link horizontally moveable against resilience, and has a linkage whereby manual control is exercised differentially to drag load, upon the valve which controls the draft-controlling ram.

3,595,320
LEVELING APPARATUS
Werner Mittelstadt, Kissing, near Augsburg, Germany, assignor to Eisenwerk Gebr. Frisch KG, Augsburg, Germany
Filed May 9, 1969, Ser. No. 823,358
Claims priority, application Germany, May 14, 1968, P 17 59 556.1
Int. Cl. L02f *3/12*; **A01b** *35/22*
U.S. Cl. 172—781 **4 Claims**

A leveling apparatus for a motor driven vehicle having its blade arranged on a rotating plane disposed beneath a triangularly shaped pivot seat wherein its front end is extended in a ball joint on the chassis of the vehicle and wherein the opposite ends are suspended via ball joints and pivotably arranged on hoists which are freely supported in all directions and mounted on the vehicle chassis so that coupled to the front end of the pivot seat is a bolt casing which receives a bolt containing a ball at its end for the ball joint suspension, the axis of the ball being displaced from the axis of the bolt contained within the bolt casing so that when the bolt is



pivoted, the height of the vehicle chassis can be adjusted accordingly.

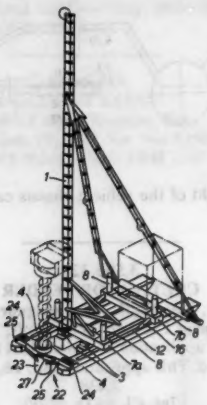
3,595,321
CULTIVATOR FENDER
Milton G. Dickey, Pine Bluff, Ark., assignor to Farmers Tractor and Equipment Company, Pine Bluff, Ark.
Continuation of application Ser. No. 511,118, Dec. 2, 1965, now abandoned. This application Jan. 16, 1970, Ser. No. 3,438
Int. Cl. A01b *17/00*
U.S. Cl. 172—513 **13 Claims**

A cultivator fender for being dragged along the ground by a cultivator vehicle to shield a row of crops from having earth, cultivated alongside the row by cultivators carried by the vehicle, thrown onto the row. The fender includes a pair of generally vertical elongate shields extending parallel to one another and spaced apart for being dragged along the ground by the vehicle on opposite sides of the row, suspension means adapted for connection to the cultivator, and a link interconnecting each shield and the suspension means. Articulating pivotal connections are provided between the forward end of each link and the suspension means and between the rearward end of each link and its shield to permit the swinging of the links relative to the suspension means and to permit swinging angular movement of the shields relative to the links in response to changing ground contours as the fender is dragged along the ground.

3,595,322
A WALKING PLATFORM FOR DRILLING EQUIPMENT WITH MEANS FOR OSCILLATING THE DRILL TUBE
Otto Reimann, 18 Kaiserstrasse, 29 Oldenburg, Germany
Filed June 11, 1969, Ser. No. 832,194
Claims priority, application Germany, June 11, 1968, P 17 55 712.9
Int. Cl. E21b *3/02*
U.S. Cl. 173—122 **7 Claims**

A walking platform for drilling equipment provided with a swivel arrangement adapted to adjustably hold a drill tube whereby the drill tube can be oscillated during a drilling operation. The platform has support feet linked by a crossbeam guide carrying a slidable crossbeam. The crossbeam is linked to each of two longitudinally displaceable walking feet by a piston cylinder arrangement for lifting the same. A drive means (mounted in gimballike manner) couples the crossbeam to each walking foot to displace (reciprocate) the same. The swivel arrangement is articulately connected to the forward end of each walking foot, and has an adjustable

aperture provided with a tensioning cylinder gripping the drill tube. Each walking foot comprises a trough-shaped



member carrying a rail along which a linkage to each piston cylinder arrangement is displaceably connected through a stirrup and rollers.

3,595,323

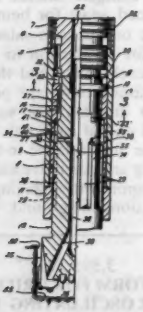
EXHAUST MEANS FOR PERCUSSION TOOL MOTORS

Marvin E. Schindler, and Vernon G. Stewart, both of Houston, Tex., assignors to Misson Manufacturing Company, Houston, Tex.

Continuation-in-part of application Ser. No. 752,990, Aug. 15, 1968, now abandoned. This application June 23, 1969, Ser. No. 835,594

Int. Cl. E21b *1/06*

U.S. Cl. 173—66 14 Claims



In one type of percussion drilling tool, the motor has an anvil which is slidable in the forward end of the motor casing between a normal working position and an abnormal advanced position when the tool is hanging off bottom and the working fluid is caused to bypass the piston and "blow" continuously through the anvil. In order to prevent "tapping" of the hammer piston at such time, due to leakage of the working fluid into the forward working chamber, this chamber is vented by means of recesses and passages in the anvil and its mounting chuck and/or the casing which are interconnected when the tool is "blowing," and which are disconnected in the normal operating position of the anvil. Special configurations of parts provide in part the interconnecting recesses and passages.

3,595,324

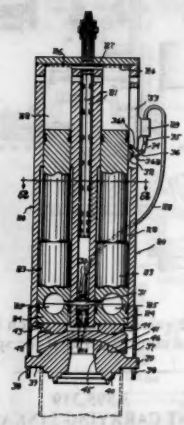
PILE DRIVERS INCLUDING MULTIPLE HAMMERS WITH COMMON ANVILS

Charles L. Guild, 90 Water St., East Providence, R.I., and Willard B. Goodman, 5 Larkspur Drive, Bellville, Ill.

Filed Sept. 11, 1968, Ser. No. 759,172

Int. Cl. E02d *7/00*

U.S. Cl. 173—101 27 Claims



Piledrivers, each including a plurality of hammers and common anvil means with aligning pads between the hammers and the anvil means and with means for phasing the operation of the hammers, with means for compensating for the effects of unphased hammer operations, and combinations thereof.

3,595,325

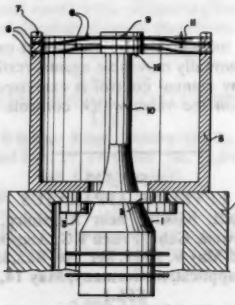
INTERMEDIARY IMPACT DEVICE

Charles C. Libby, and William J. White, both of Columbus, Ohio, assignors to The Ohio State University, Columbus, Ohio

Filed Apr. 28, 1969, Ser. No. 819,886

Int. Cl. H01v *7/00*

U.S. Cl. 173—117 9 Claims



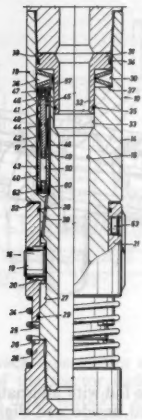
This invention is an apparatus for transferring vibratory-mechanical energy from an electromechanical transducer to a work surface by providing an intermediary impacting means which alternately contacts the work surface and the transducer. The intermediary impacting means is restrained for collinear movement by a flexible restraining means having a rigid support which is fixed to the nodal region of the electromechanical transducer.

3,595,326

DIRECTIONAL DRILLING APPARATUS

Jackson R. Claycomb, Houston, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed Feb. 3, 1970, Ser. No. 8,217
Int. Cl. E21b 7/08
U.S. Cl. 175—73 13 Claims



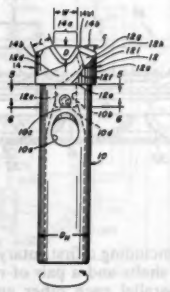
As a preferred embodiment of the invention disclosed herein, a new and improved tool carrying a drill bit on its lower end is dependently coupled from a drill string and lowered into a borehole which is to be excavated along a selected axis. One or more pressure-responsive wall-engaging members are operatively arranged on the tool in such a manner that, when correctly oriented and actuated, the drill bit will be diverted in a desired lateral direction. Pressure-actuated control means are arranged on the tool for selectively extending the wall-engaging members in response to deliberate changes in the circulating pressure.

3,595,327

ROTARY DRILL BIT AND HOLDER

Theodore R. Self, Lynch, Ky., assignor to United States Steel Corporation

Filed Aug. 11, 1969, Ser. No. 848,988
Int. Cl. E21b 9/36
U.S. Cl. 175—410 12 Claims



A combination for drilling a hole in a rock strata is disclosed and has a hollow drill bit holder provided with an exhaust port, a shank receiving opening in one end, and a material receiving surface adjacent the one end. A dill bit has a bit body provided with an insert slot extending across the bit body and having a shank in the shank receiving opening so that the drill bit holder and the drill bit rotate as a unit in one direction. A drilling insert is secured in the insert slot and has a peeling cutter for peeling off substantially large peelings of rock strata, and an outer cutter extending from the peeling cutter to the periphery of the drilling insert for grinding off substantially fine dust from the rock strata. The bit body has a troughing surface sloping away from the peeling cutter and the outer cutter to the material receiving surface. The troughing surface is operable to rapidly guide the peelings and the dust from the peeling cutter and the outer cutter to the material receiving surface and across the material receiving surface to the exhaust port to provide rapid and complete removal of the peelings and the dust. Connecting means are provided for connecting the drill bit holder to the shank, and drive means are used for rotating the drill bit holder and the drill bit to cut the hole in the rock strata.

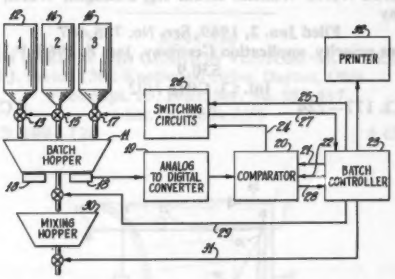
This combination, as disclosed, is functional to provide improved penetration rates and extended bit life by providing more rapid and complete removal of the peelings and the dust, a reduction in the amount of thrust on the drill bit holder required to drill the hole in the rock strata, and a reduction in the operating temperature of the drill bit.

3,595,328

AUTOMATIC BATCH WEIGHING SYSTEM

Paul D. Griem, Jr., Newark, Ohio, assignor to Owens-Corning Fiberglas Corporation

Filed Sept. 8, 1969, Ser. No. 855,951
Int. Cl. G01g 19/22
U.S. Cl. 177—1 10 Claims



An automatic batch weighing system for compounding a series of batches containing predetermined measured quantities of various constituents. The constituents for each batch are successively fed into a batch receiving hopper. The compounded constituents are thereafter mixed in a mixing hopper and delivered to a selected utilizing means. The feeding of each constituent is adjusted by estimating the weight of an unpredictable dribble and by compensating for any deviation in the most recent batch compounded for the selected utilizing means, to average out errors in the series of batches.

3,595,329

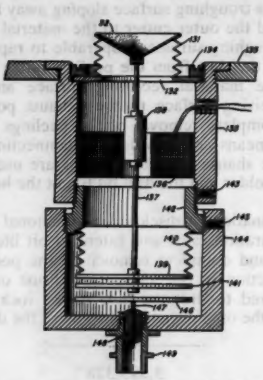
WEIGHING APPARATUS WITH OSCILLATION-COMPARISON ELECTRICAL TRANSDUCER

Ronald Withnell, Wading River, N.Y., and Leon Lachman, Millburn, N.J.

Filed Sept. 30, 1968, Ser. No. 766,018
Int. Cl. G01g 3/16, 7/00
U.S. Cl. 177—210 4 Claims

An arrangement for determining the weight of an object relative to a predetermined reference weight. A compliant system is vibrated along a predetermined axis substantially at the mechanical resonance frequency, said system having means for supporting the object. The system oscillation amplitude is proportional to the inertia of the system and is independent of gravity. The oscillation amplitude of the system is converted into an electrical signal which is compared with

a reference signal representative of the reference weight and an error signal is utilized to provide a measurement and/or control function in correspondence with the difference between the weight of the object and the reference weight.

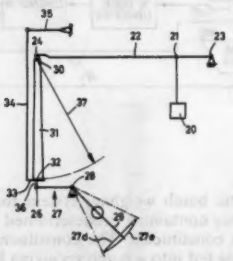


3,595,330

MULTIPLE LEVER PENDULUM BALANCE

Ernst Kuhnle, Balingen, Wurttenberg, Germany, assignor to Bizerba-Werke Wilhelm Kraut Kg, Balingen, Wurtt, Germany

Filed Jan. 2, 1969, Ser. No. 788,447
Claims priority, application Germany, Jan. 8, 1968, P 15 74 530.9
Int. Cl. G01g *1/02*
U.S. Cl. 177—224 **8 Claims**



A multiple lever balance having a main lever supported on a main knife edge, a load input knife edge supported on the main lever, a lever having a load to be weighed applied thereto, a horizontally disposed weighing plate connected with the load input knife edge, and a force member connected with the weighing lever and in rolling contact with the weighing plate to assure that horizontal forces are applied vertically to the load input knife edge.

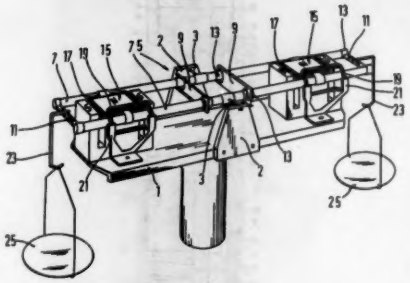
3,595,331

ELECTRONIC BALANCE

Theodor Reinhard Gast, Berlin, and Horst Hertel, Gottingen-Weende, both of, Germany, assignors to Sartorius Werke G.m.b.H. (und vormals Gottinger Prarisionswaagenfabrik G.m.b.H.)

Filed Dec. 4, 1968, Ser. No. 781,115
Claims priority, application Germany, Dec. 20, 1967, P 15 49 280.5
Int. Cl. G01g *3/14*
U.S. Cl. 177—210 **7 Claims**

A balance beam adapted to carry a load is mounted on a balance beam support for pivotal deflection on a balance beam aXis from a no-load position in response to said load. Inductive indicating and magnetic compensating means for indicating said load and for an automatic compensation of said pivotal deflection comprise a pair of rotary moving coils secured to said balance beam on opposite sides of said balance beam axis. A pair of stationary permanent magnets, which are carried by said support and each of which is associated with one of said rotary moving coils, and a pair of identical, stationary, framelike field coils carried by said support and adapted to be fed with alternating current. The field coils are each disposed beside and slightly spaced from one of the rotary moving coils associated therewith. Said field coils are symmetrically disposed with respect to said balance beam axis and symmetrically disposed with respect to a reference plane which in said no-load position of said balance beam extends through said balance beam axis and parallel to said balance beam. Said field coils extends transversely to said reference plane.

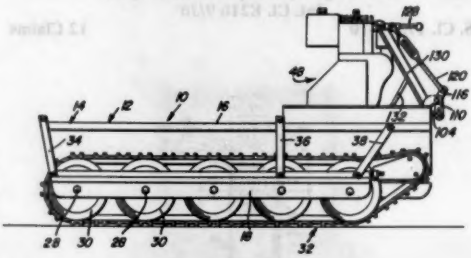


3,595,332

CRAWLER-TYPE VEHICLE

Grant H. Sanstrom, P.O. Box 2515, Yakima, Wash.

Filed Oct. 9, 1968, Ser. No. 766,078
Int. Cl. B62d *11/02*, *11/08*
U.S. Cl. 180—6.7 **7 Claims**



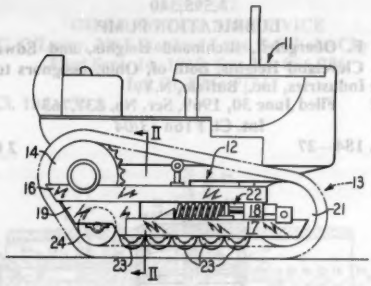
A drive system including a first rotary drive shaft, a pair of driven rotary half shafts and a pair of rotary jackshafts. The shafts generally parallel each other and the jackshafts are supported for independent swinging movement about the half shafts toward and away from the drive shaft. Longitudinally spaced portions of the drive shaft are drivingly connected to the jackshafts through drive belts trained about pulleys on the drive and jackshafts. The jackshafts are drivingly connected to the half shafts through drive chains trained about sprocket wheels on the jack and half shafts and brake means are operatively associated with the jackshafts for braking the latter when they are moved toward the shafts, which movement of the jackshafts simultaneously untensions the belts drivingly connecting the shaft to the jackshafts.

3,595,333

HIGH CLEARANCE TRACTOR

Gail G. Barbee, Aurora, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Sept. 24, 1969, Ser. No. 860,494
Int. Cl. B62d 55/08
U.S. Cl. 180—9.62 2 Claims



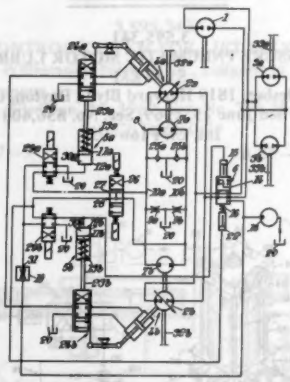
A high clearance track-type tractor wherein the undercarriage on each side of the tractor includes an upper frame member supporting a drive sprocket in a relatively conventional position relative to the tractor body. A lower track roller frame member is rigidly secured to the upper frame member and supports an idler sprocket, a plurality of track rollers, with an additional track roller being supported generally beneath the drive sprocket to form a triangular path for the endless track.

3,595,334

HYDROSTATIC TRANSMISSION CONTROLS

Olivier Issac, Lyon, France, assignor to Societe Industrielle Generale De Mecanique appliquee S.I.G.M.A., Paris, France

Filed Sept. 17, 1969, Ser. No. 858,654
Claims priority, application France, Sept. 20, 1968, 167,082
Int. Cl. B60k 17/10
U.S. Cl. 180—66 R 11 Claims



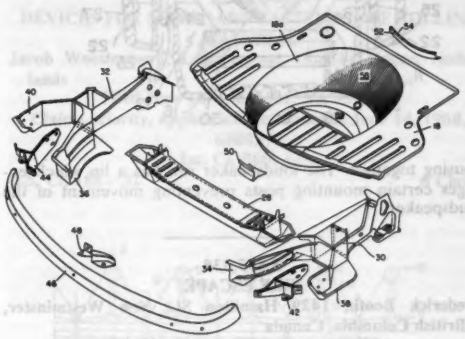
A hydrostatic transmission of the kind useful in automotive vehicles is provided with dual speed-range control, such as is especially useful for heavy-duty vehicles used at low speed of travel on a working site but so that travel at relatively high speed is possible between such sites, and with smooth transition between speed ranges. Also provided is an antislip control to counteract automatically any overspeeding of the drive means for either traction wheel on a common axle.

3,595,335

FRONT END VEHICLE BODY STRUCTURE

Henry W. Wessells, III, Paoli, and Walter S. Eggert, Jr., Huntingdon Valley, both of, Pa., assignors to The Budd Company, Philadelphia, Pa.

Filed Sept. 25, 1969, Ser. No. 861,096
Int. Cl. B60r 19/00
U.S. Cl. 180—91 4 Claims



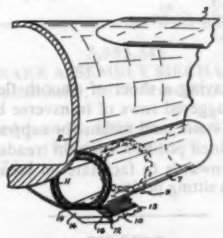
A safety body structure for the front end of a rear engine mounted vehicle having a kickup device for moving a spare tire from a horizontal stored position to a vertical buffer position during a frontal collision of the vehicle and providing a body structure for progressive yielding during collision.

3,595,336

HIGH ENERGY AIR CUSHION VEHICLE SKID BRAKE

David J. Perez, 1302 Knollwood Drive, Dayton, Ohio

Filed Sept. 19, 1969, Ser. No. 859,467
Int. Cl. B60v 1/16
U.S. Cl. 180—128 6 Claims



A high energy air cushion skid brake for decelerating gas cushion vehicle utilizing an air trunk (bag) design comprising means for rigidizing the air trunk structure to provide high contact skid pressure and including an expansible bellows mounted on the bottom side of the air trunk structure with friction skid brake members carried on the lower side of the bellows for ground contact with means for inflating and expanding the bellows for surface contact and including an air pervious heat shield fixed between the bellows and the skid brake member which dissipates the skid brake friction heat away from the rigidized air trunk structure when the skid brake member contacts with the ground.

3,595,337

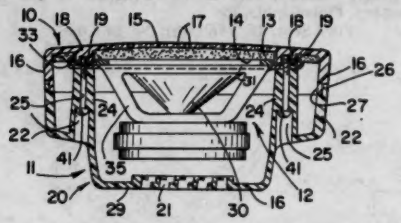
SPEAKER ASSEMBLY

Bart C. Furey, Wheaton, and Robert A. Paul, Hanover Park, both of, Ill., assignors to Motorola, Inc., Franklin Park, Ill.

Filed Mar. 16, 1970, Ser. No. 19,643
Int. Cl. H04r 1/28; G10k 13/00
U.S. Cl. 181—31 B 10 Claims

A loudspeaker assembly including a loudspeaker supported within a housing wherein the mounting rim of the loud-

speaker is sandwiched between mounting posts in the front and rear housing members which align and hold the speaker



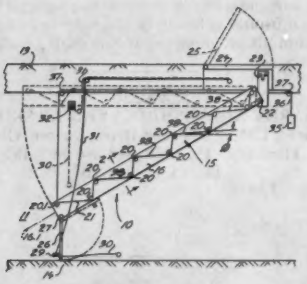
housing together. The loudspeaker rim has a lip which engages certain mounting posts preventing movement of the loudspeaker.

3,595,338

FIRE ESCAPE

Frederick Booth, 1429 Hamilton St., New Westminster, British Columbia, Canada

Filed June 18, 1970, Ser. No. 47,418
Int. Cl. E06c *7/08, 9/06*
U.S. Cl. 182—49 **5 Claims**



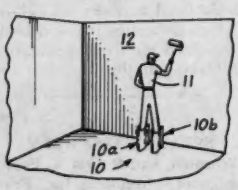
A fire escape having a sheet of smooth flexible material woven between staggered rows of transverse braces so as to present a flight of stairs, and means for supporting the flight of stairs in an inclined position wherein treads of steps slope outwards and downwards to facilitate an escape to descend the fire escape in a sitting position.

3,595,339

PAIR OF STILT BOOTS

Wesley D. Ballard, c/o S. M. Tucker, 1011 North 15th St., and John H. Staley, 4512 Timbercrest Lane, both of Waco, Tex.

Filed Feb. 24, 1970, Ser. No. 13,602
Int. Cl. A43b *7/16, 3/10;* **F04g** *1/00*
U.S. Cl. 182—230 **10 Claims**



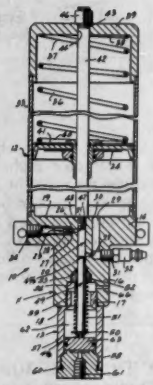
The invention discloses a pair of stilt boots, incrementally vertically adjustable, whereby the operator, by foot movement, can selectively release the spring urged latched foot plates attached to his respective left and right feet, to raise or lower them by selective weight shift and foot pressure control. Each boot mainly comprises a boot housing or latch lug positioner or support providing vertically spaced apart latch means under which a step plate, to which a foot of the operator is attached, may be latched in increments of vertical adjustment.

3,595,340

LUBRICATION PUMP

Ronald F. Obergefell, Richmond Heights, and Edward E. Kish, Cleveland Heights, both of, Ohio, assignors to Houdaille Industries, Inc., Buffalo, N.Y.

Filed June 30, 1969, Ser. No. 837,763
Int. Cl. F16n *13/04*
U.S. Cl. 184—27 **2 Claims**



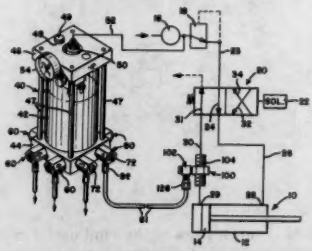
A lubricant pump assembly comprising a pump body and a lubricant reservoir mounted on the body. The pump body is of cast one-piece construction and is arranged to interchangeably accommodate adapters enabling the pump assembly to be operated either manually, pneumatically, hydraulically or by virtue of a motor drive.

3,595,341

LOW PRESSURE PNEUMATIC MOTOR LUBRICATING SYSTEM

Edgar C. Oglesbee, 1819 Harvard Blvd., Dayton, Ohio

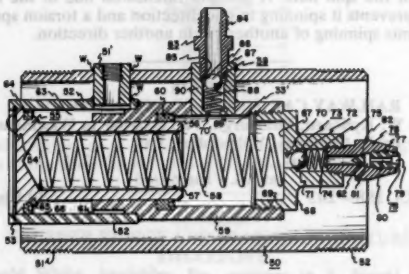
Filed June 25, 1969, Ser. No. 836,408
Int. Cl. F16n *7/34*
U.S. Cl. 184—55 A **11 Claims**



An automatic low pressure lubricating system with a reservoir and an automatic air pressure regulator for supplying a low air pressure to the oil therein and one or more flow control regulator valves to permit the flow of a small quantity of

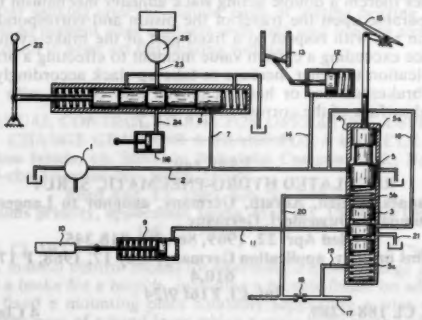
oil to a specially constructed fitting in the air line to an air operated motor, such as a piston motor for lubricating the motor. The fitting has a one-way valve, and a hydraulic dam, and permits injection of oil only during the exhaust portion of the cycle. The dam traps the oil and prevents its loss during the exhaust cycle and permits the oil to be picked up on the next succeeding pressure cycle.

3,595,342
OILER SYSTEM AND DEVICE
Paul C. O'Leary, 2668 Stanford Lane, Salt Lake City, Utah
Filed Sept. 16, 1969, Ser. No. 866,786
Int. Cl. F16n *7/34*
U.S. Cl. 184—56 A **5 Claims**



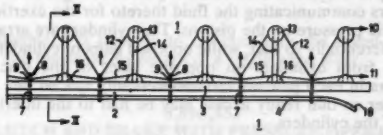
The subject comprises an oiler system and device usable with a compressed air supply for providing lubricant-entraining compressed air to an air tool. The same avoids pressuring the oil tank or reservoir of the system and, instead, provides a compressed-air actuated, piston-type pump for sucking in oil from a reservoir into a variable-volume lubricant chamber during periods of absence of applied air pressure and then, during periods of applied air pressure forcing lubricant from the chamber into an oil injector, having a variable, presettable outlet orifice, which is disposed in the compressed air stream leading to the connected air tool. Check valve means is incorporated such that the pressured oil or lubricant is not returned to the reservoir or tank connected to the device during pressure strokes of the piston.

3,595,343
CONTROL SYSTEM FOR LIFT TRUCKS
William A. Williamson, Niles, Mich., assignor to Clark Equipment Company
Filed Jan. 15, 1969, Ser. No. 791,354
Int. Cl. B66b *9/20*
U.S. Cl. 187—9 **8 Claims**



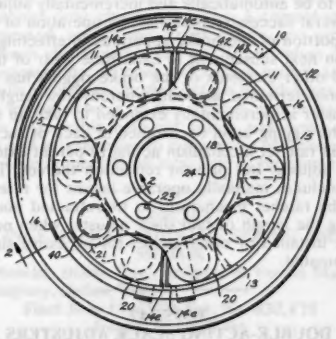
The system employs hydrostatic drive for a lift truck in combination with hydraulic system elements which control not only the hydrostatic drive and truck speed through the accelerator setting, but also afford elements and controls for actuation of the lift mechanism which make possible a speed up of the engine to provide a fast lift while the truck is driven at a controlled slow speed.

3,595,344
DEVICES FOR SHIPBOARD FASTENING OF ROLLING MATERIAL
Jacob Woestenburg, Landrestraat 49, The Hague, Netherlands
Filed June 10, 1969, Ser. No. 831,946
Claims priority, application Netherlands, June 14, 1968, 6808372
Int. Cl. B60t *3/00*
U.S. Cl. 188—32 **6 Claims**



A wheel receiving and clamping track includes a fixed rail and a juxtaposed clamping rail which is movable laterally toward and away from the fixed rail. Elongated actuating members are slidable transversely of the track and engage the clamping rail at longitudinally spaced points. Two sets of pulleys are mounted at fixed points on the side of the fixed rail opposite from the clamping rail and two actuating cables pass over the respective sets of pulleys and through eyes in the actuating members so that when one of the cables is tightened the actuating members draw the clamping rail toward the fixed rail while tightening of the other cable releases the clamping rail.

3,595,345
BRAKE ASSEMBLY MECHANISM
Howard W. Wachenheim, 2525 Ward St., Apt. G-8, Smyrna, Ga.
Filed June 18, 1969, Ser. No. 834,409
Int. Cl. F16d *55/02*
U.S. Cl. 188—72.4 **4 Claims**



A disc-type brake assembly is described in which the braking disc is an annular member having stopping surfaces facing laterally of the wheel. The disc is a hollow cast member having a plurality of radial passageways extending from the radially inner edge to the radially outer edge of the disc for cooling purposes, and the disc is divided circumferentially

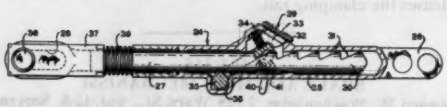
into two semicircular sections with the ends of the sections being spaced sufficiently to allow thermal expansion of the sections. The disc sections are fixedly attached to the wheel either by screws extending radially from the wheel into the radially outer edge of the disc or by projections integral with the disc and extending radially outwardly therefrom to engage with the wheel. In the latter form of attachment tension spring clips are used to join the disc sections at the ends thereof. An annular housing is provided which supports the radially inner edge of the disc member and has a plurality of cylinders extending radially outwardly therefrom on each side of the disc member so that the inner ends of the cylinders in effect from sidewalls for the housing partially enclosing the lateral surfaces of the disc. Each cylinder has an open end therein adjacent the braking disc and a closed end remote therefrom. A piston is provided in each cylinder which is operated hydraulically to travel axially of the cylinder toward the disc exerting a lateral force thereon for braking purposes. In addition to the cylinders being integral with the housing a conduit is formed integrally within the housing and cylinders continuously connecting each of the cylinders communicating the fluid thereto for the exertion of hydraulic pressure on the pistons. The cylinders are arranged circumferentially so that, while opposed pairs of cylinders are formed from cylinders on opposite sides of the disc, the cylinders in each pair are circumferentially spaced one from the other so that ready access may be had to the interior of each of the cylinders.

3,595,346

SLACK ADJUSTING MECHANISM FOR COMBINED FLUID PRESSURE AND HAND-OPERATED BRAKE APPARATUS

Walter B. Kirk, Monroeville, and Andrew G. Haydu, Pittsburgh, both of, Pa., assignors to Westinghouse Air Brake Company, Wilmerding, Pa.

Filed May 26, 1969, Ser. No. 827,725
Int. Cl. F16d *65/54*
U.S. Cl. 188—200 **11 Claims**



A slack adjuster for maintaining slack or lost motion to a prescribed minimum in the hand-operated portion of a combined fluid pressure and hand-operated brake apparatus for a railway vehicle, said slack adjuster, which includes a rack and pawl ratchet mechanism, is so arranged in the brake rigging as to be automatically and incrementally adjustable to one of several successive positions, by operation of the fluid pressure portion of the brake apparatus in effecting a brake application next subsequent to each time wear of the brake shoes and other elements of the brake rigging has accumulated a predetermined amount, whereby the length of the slack adjuster is incrementally extended to take up excessive slack in the rigging upon occurrence of each of such adjustments, said ratchet mechanism acting to permit extension of the slack adjuster but prevent retraction thereof. The slack adjuster includes manually operable means for resetting the rack of the ratchet mechanism to its retracted position for shortening the length of said slack adjuster when new brake shoes are installed or other causes for excessive slack have been eliminated.

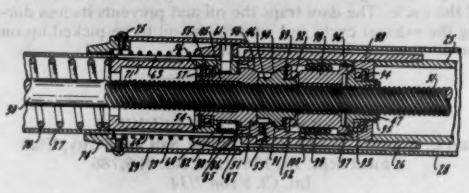
3,595,347

DOUBLE-ACTING SLACK ADJUSTERS

Henry R. Billeter, Deerfield, Ill., assignor to Sloan Valve Company, Chicago, Ill.

Filed May 12, 1969, Ser. No. 832,544
Int. Cl. F16d *65/66*
U.S. Cl. 188—202 **15 Claims**

This slack adjuster employs a threaded rod telescoped within a tubular housing in which there are three spin nuts on the rod adapted to be rotated to either take up slack or let it out. The spin nuts have clutch surfaces engageable with cooperating clutch surfaces in the housing to control the action of the spin nuts. A pin and ratchet on one of the spin nuts prevents it spinning in one direction and a torsion spring prevents spinning of another nut in another direction.

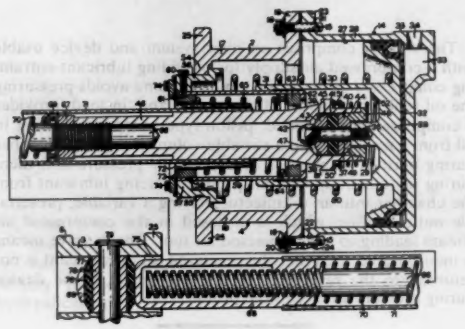


3,595,348

RAILWAY CAR TRUCK BRAKE APPARATUS

Allen W. Kyllonen, Pittsburgh, Pa., assignor to Westinghouse Air Brake Company, Wilmerding, Pa.

Filed Nov. 24, 1969, Ser. No. 879,231
Int. Cl. F16d *65/66*
U.S. Cl. 188—203 **10 Claims**



A railway car truck brake apparatus of the type in which two parallel-extending brakeshoe-carrying brake beams are operated to apply and release the brakeshoes to and from the car wheel treads by means of one or more brake cylinder devices secured to the brake beams, each cylinder device being provided with a piston having a piston rod that is operatively connected to the other brake beam and that embodies therein a double acting slack adjuster mechanism that is operable upon the travel of the piston and corresponding piston rod with respect to a fixed part of the brake cylinder device exceeding a chosen value incident to effecting a brake application to either increase or take up slack accordingly as the brakeshoe has or has not moved into contact with the tread surface of the corresponding wheel.

3,595,349

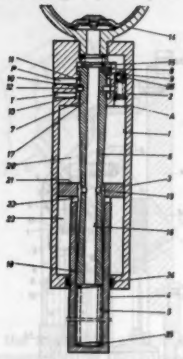
REGULATED HYDRO-PNEUMATIC STRUT

Johannes Ortheil, Anrath, Germany, assignor to Langen & Company, Dusseldorf, Germany

Filed Apr. 22, 1969, Ser. No. 818,345
Claims priority, application Germany, May 17, 1968, P 17 50 610.4
Int. Cl. F16f *9/24*
U.S. Cl. 188—289 **4 Claims**

A level regulated hydropneumatic strut or like component in which a piston-cylinder assembly and a hydroreservoir or accumulator connected to the piston space is so constructed and arranged that the flow paths between the piston space,

the annular space or the space surrounding the piston rod and the reservoir are throttled increasingly, viewed from the

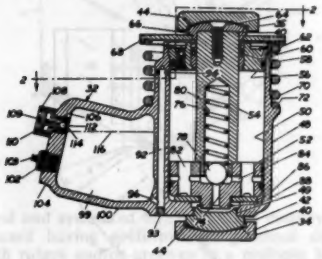


level position, upon elastic deflections of the piston as a function of the movement path of the piston.

3,595,350
SNUBBER DEVICE AND BEARING STRUCTURE THEREFORE

Donald Wiebe, Sewickley, Pa., assignor to A. Stucki Company, Pittsburgh, Pa.

Continuation-in-part of application Ser. No. 709,142, Feb. 28, 1968, now abandoned. This application Aug. 22, 1969, Ser. No. 857,274
Int. Cl. F16f 9/32
U.S. Cl. 188—321 **9 Claims**



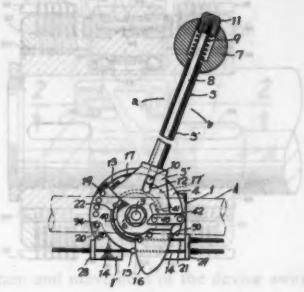
A hydraulic snubber device for railroad car trucks to be interposed between a bolster end and side frame member. This device provides for mounting in compression only between center seeking concave-convex pairs of mating bearing portions to prevent edge contacts with high unit bearing stresses as found in prior art flat bearing surfaces.

3,595,351
MANUAL CONTROL MEANS FOR OPERATING A SPEED CHANGE GEAR AND A BRAKE FOR A BICYCLE

Takuo Ishida, c/o Shimang Industrial Company Ltd., No 77 3-cho, Oimatsu-cho, Sakai, Japan

Filed Aug. 13, 1969, Ser. No. 849,736
Claims priority, application Japan, Mar. 13, 1969, 44/19056
Int. Cl. F16h 57/10
U.S. Cl. 192—4 **5 Claims**

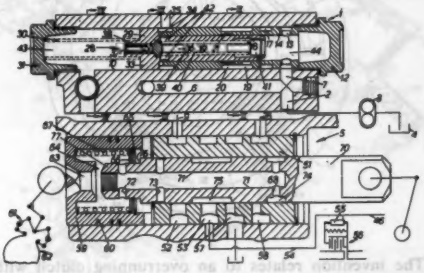
A manual control means for operating a speed change gear and a brake for a bicycle, including a bicycle frame on which are fixed a mounting plate rotatably supporting a wire reel and the base of a hand lever which a main hand lever body is secured. The wire reel positioned on a shaft projecting from the mounting plate and holding one end of a wire connected to a gear shifter hand lever includes a connecting element for transmitting its rotary movement to the wire reel and the engagement of this connecting element with the wire reel is releaseable it is possible to operate both the speed change gear and the brake by means of a single hand lever.



3,595,352
CLUTCH AND BRAKE WITH PRESSURE OPERATED SEQUENCING VALVE

Eugenio Todeschini, Via Sirotti, Italy, assignor to Massey-Ferguson Services, N.V. Curacao, Netherlands

Filed May 12, 1969, Ser. No. 823,664
Claims priority, application Italy, May 24, 1968, 16893A/68
Int. Cl. F16d 67/04
U.S. Cl. 192—13 R **5 Claims**



Each track of a crawler vehicle is provided with a hydraulically operated drive clutch and brake. A control valve and a pilot operated sequencing relief valve are provided to operate each clutch and brake set. These valves operate to fully disengage the clutches before the brakes are applied and to fully release the brakes before the clutches are reengaged to minimize wear on the clutches and brakes. The relief valve is movable between clutch and brake operating positions and is responsive to completion of these operations to control the supply of hydraulic fluid to the control valve.

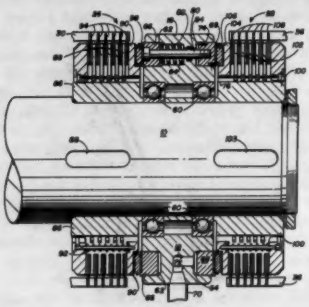
3,595,353
COUPLINGS WITH STATIONARY SPRING AND FLUID MOTOR

Jene A. Beneke, Dallas, Tex., assignor to Verson Manufacturing Company, Dallas, Tex.

Filed June 11, 1969, Ser. No. 832,175
Int. Cl. F16d 67/04
U.S. Cl. 192—18 A **4 Claims**

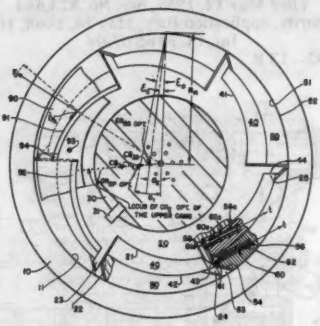
A shaft is rotatably journaled through a stationary annular housing. Two sets of friction clutch plates are disposed on opposite sides of the stationary annular housing and are rotatable with the shaft when disengaged. A pair of annular pistons are slidable within circular chambers defined on opposite sides of the stationary housing, with fluid pressure being selectively applied to the annular pistons such that one

of the pistons compresses and engages one set of the friction clutch plates. A number of rigid connecting members con-



nect the two annular pistons such that only one set of the friction clutch plates are engaged at a time.

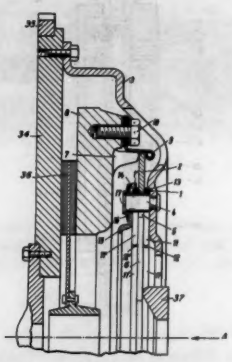
3,595,354
ONE-WAY CLUTCH COMPRISING WEDGING MEANS
Jean F.G.M.L. Charpentier, 254 N Highland, Akron, Ohio
Filed June 26, 1969, Ser. No. 836,862
Int. Cl. F16d *41/07*
U.S. Cl. 192—45.1 **19 Claims**



The invention relates to an overrunning clutch with extremely high response characteristics and very little backlash. Essentially, careful consideration of excentricity in wedges associated between a driving member and a driven member in combination with friction factor between the driving, driven, and wedge or cam surfaces achieves a highly efficient clutch. Preferably, a primary wedge or cam is associated with the secondary wedge or cam, with both cams urged into an actuating position causing a driving relationship between the driven member and the driving member. This driving relationship is overcome upon a reverse movement of the driving member or an overriding of the driven member, all occasioned because of the excentric characteristics defining the wedges or cams in association with excentric surfaces on the driven member cooperating with radial steps of lips so that the cams always rotate or remain in the same relative relationship to the driven member.

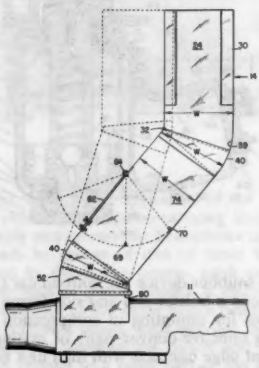
3,595,355
SEATING ASSEMBLY FOR PLATE SPRINGS, ESPECIALLY IN CLUTCHES
Paul Maucher, Neuweier, and Klaus Steeg, Eisental, both of, Germany, assignors to Luk Lamellen-und Kupplungsbau GmbH, Buhl (Baden), Germany
Filed July 2, 1969, Ser. No. 838,610
Claims priority, application Germany, July 6, 1969, P 17 75 115.4
Int. Cl. F16d *13/71*
U.S. Cl. 192—70.27 **16 Claims**

Seating assembly for plate spring includes a pair of annular rolloff seats disposed in substantially parallel planes respectively on opposite sides of a plate spring, at least one of the seats being in the form of a wire ring, a cover member overlying one of the annular seats, fastening pins connecting the cover member and the plate spring sandwiched between the



annular seats into a unitary structure, the wire ring having ends spaced from and facing one another, and bearing means having a contour surface corresponding at least partly to the contour surface of the wire ring and being received at least partly in the bearing means.

3,595,356
ADJUSTABLE CHUTE AND ACCESS DOOR
Daniel Q. Boje, Fairfield, and Sol Kestin, Bronx, both of, N.Y., assignors to Compactor Corporation
Filed May 5, 1969, Ser. No. 821,741
Int. Cl. B65g *11/00*
U.S. Cl. 193—15 **10 Claims**

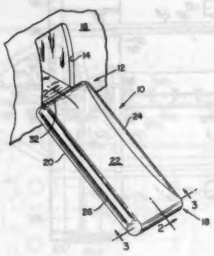


An adjustable chute assembly and access door therefor, comprising at least a pair of interconnected chute components, interconnected in such a manner that the widthwise dimensions of said chute assembly will always be constant said access door provided in one of said chute components to afford access into the interior of said chute assembly.

3,595,357
NONOBSTRUCTING ESCAPE SLIDE
Clarence S. Melander, Neptune, N.J., assignor to The Garrett Corporation, Los Angeles, Calif.
Filed July 25, 1969, Ser. No. 845,014
Int. Cl. B65g *11/10*
U.S. Cl. 193—25B **6 Claims**

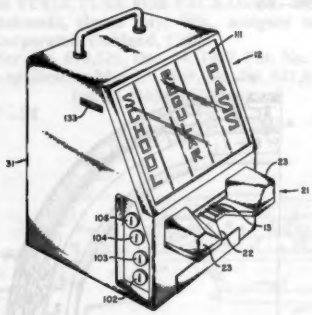
An escape slide has an inflatable fabric frame assembly supporting a slide surface defined by a taut fabric membrane.

The lower end of the assembly supports the membrane in spaced relation over at least the middle portion of the lower member which joins and spaces apart the inflatable side



beam members of the assembly, so that the membrane may be depressed by masses sliding thereon without interference or "bump" by the lower joining member.

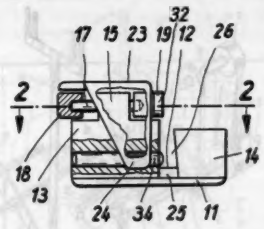
3,595,358
TICKET COLLECTION METHOD AND APPARATUS
David W. Chase, 774 Clarinida Ave., Daly City, Calif.
Filed Mar. 7, 1969, Ser. No. 805,278
Int. Cl. G07f 1/06
U.S. Cl. 194—4 R **5 Claims**



A method and system of fare collection employing novel semirigid card having preformed longitudinal deformities mating with ridges and/or grooves in a multiple keyway or slot for insertion therein. Card engagement with switching means in the keyway actuates a cutter to remove a predetermined portion of the card for each insertion as a fare collection. Mechanical gates cooperating with the keyway are operable to establish which cards of different configuration may be inserted.

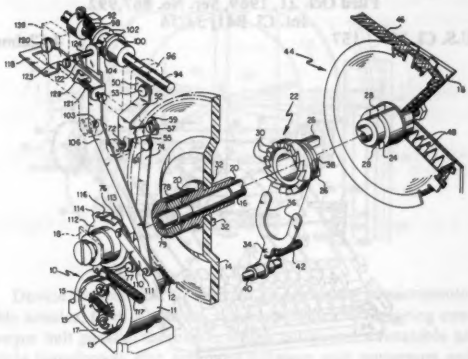
3,595,359
DEVICE FOR CHANGING THE TYPE CARRIERS OF TYPE LEVERS
Olaf Meisner, 1 Berlin, 38 Krottnauerstr. 21, and Reinhart Rodrian, 1 Berlin, 37 Albertinenstr. 22, both of, Germany
Filed July 19, 1968, Ser. No. 746,189
Claims priority, application Germany, July 21, 1967, P 16 11 476.4
Int. Cl. B41j 1/04
U.S. Cl. 197—36 **12 Claims**

A device for removing, housing, and reassembling a type carrier from a type lever in which said type carrier is retained by resilient retaining means housing said type carrier on removal of said type carrier from said type lever comprising a body in which is formed a channel for receiving the type carrier, release means on said body movable from a first nonoperative position to a second position to engage and move the retaining means from its retaining position and a stripping member adapted to engage and hold the type carrier in the channel on movement of the release means to its



second position and movement of the device away from the type lever.

3,595,360
CARRIAGE DECELERATOR FOR TABULATION AND CARRIAGE RETURN OPERATION
Hans W. Mueller, Cortland, N.Y., assignor to SCM Corporation
Continuation of application Ser. No. 618,689, Feb. 27, 1967, now abandoned. This application Nov. 17, 1969, Ser. No. 877,329
Int. Cl. B41j 19/02
U.S. Cl. 197—64 **5 Claims**

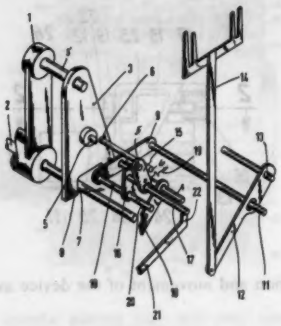


An apparatus for decelerating a typewriter carriage at the end of a tabulation or carriage return operation. A one-way spring clutch is operable to drive a centrifugal governor when conditioned by either a tabulation linkage or a carriage return linkage.

3,595,361
RIBBON FORK ACTUATING MECHANISM FOR TYPEWRITERS AND THE LIKE
Rudolf Rekewitz, Munich, and Peter Kulzer, Munich-Solln, both of, Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany
Filed Mar. 18, 1968, Ser. No. 713,808
Claims priority, application Germany, Apr. 25, 1967, S 109523
Int. Cl. B41j 33/56, 35/10
U.S. Cl. 197—157 **5 Claims**

An apparatus for typewriters and the like, particularly power-driven apparatus for effecting a positive lifting and lowering of the ribbon fork thereof between a rest position and either one of two operating positions, in which a drive lever is operatively coupled to the ribbon fork actuating arm through a pair of intermediate levers, and control of the operating connection is effected by rigidly connecting the drive lever with one of the intermediate levers, whereby they

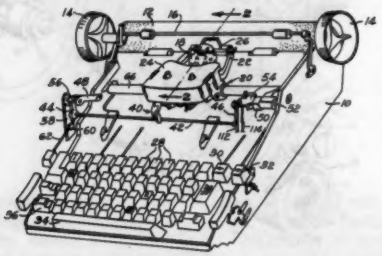
act as one, or rigidly connecting the intermediate levers whereby they act as a single lever, the selection being determined by the positioning of a control member which correspondingly actuates the means for effecting such rigid connections.



3,595,362
TYPEWRITER BACKSPACE AND RIBBON-FIELD CONTROL

William H. Wolowitz, 6905 Persimmon Tree Road, Bethesda, Md.

Filed Oct. 21, 1969, Ser. No. 867,992
Int. Cl. B41j *33/56*
U.S. Cl. 197—157 **4 Claims**



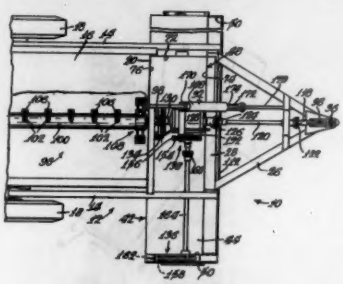
A typewriter of the single-element ("golf-ball") printing element-type, with laterally fixed paper support and a movable carrier for the single-element printing element, including means disposed at a fixed location on or near the keyboard for conveniently adjusting the vertical throw of the ribbon vibrator on the carrier, regardless of carrier movement, to select the color or kind of printing impression. The control means is interconnected with a pair of carrier back-spacing keys to facilitate automatic ribbon-field changes when a two-field ribbon of the error-correcting type is employed.

3,595,363
REFUSE GATHERING MACHINE

Herbert O. Vinyard, Route 2, Box 75A, Hammond, La.

Continuation of application Ser. No. 838,990, July 3, 1969, now Patent No. 3,348,652. This application Apr. 23, 1970, Ser. No. 31,192
Int. Cl. B65g *65/06*
U.S. Cl. 198—7 **11 Claims**

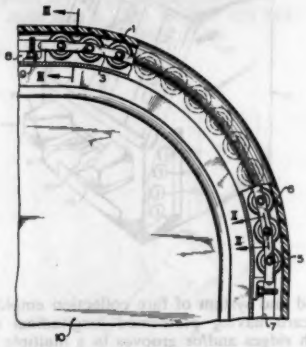
A refuse gathering machine having an open bottom, horizontal housing and an upwardly extending discharge chute communicating with the interior of the housing, driven means in the housing to move refuse into the area below the chute, a rotor in the housing to throw refuse into the chute, and one or more thrower rotors in the chute for discharging refuse from the housing through the chute to an adjacent receptacle. An improved chute structure facilitates the discharge of refuse to the receptacle by causing more efficient transfer of refuse from each rotor to the rotor above it.



3,595,364
REVERSING MEANS FOR HANDRAIL STRUCTURE OF ESCALATORS

Klaus Schoneweiss, Hattingen, Germany, assignor to Orenstein & Koppel Aktiengesellschaft, Charlottenburg, Germany

Filed Jan. 27, 1969, Ser. No. 794,277
Int. Cl. B66b *9/12*
U.S. Cl. 198—16 **5 Claims**



For use in connection with an escalator having a handrail, a guiding structure which includes a plurality of rollers arranged one behind the other, fishplate means detachably interconnected in the manner of a chain and detachably supporting said rollers, said rollers defining the reversing path for an escalator handrail and being adapted to support and frictionally engage the same, and supporting means for detachably supporting and guiding said rollers.

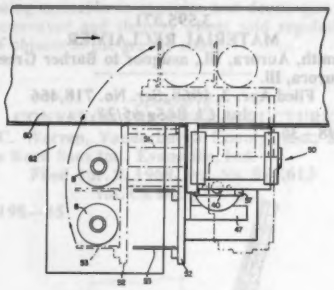
3,595,365
GEAR DRIVE FOR 90 DEGREE PUSH-OUT FOR GLASSWARE FORMING APPARATUS

Alphonse W. Faure, Philadelphia, Pa., assignor to C. S. S. Machine & Tool Co., Inc., Philadelphia, Pa.

Filed Mar. 18, 1970, Ser. No. 20,547
Int. Cl. B65g *47/00*
U.S. Cl. 198—24 **11 Claims**

For glassware forming apparatus, a gear drive is provided for connecting the main horizontal drive shaft, which rotates continuously in one direction, to a vertical output shaft to oscillate the output shaft, on which the fluid motor for the 90° pushout is mounted, through an angle of approximately 90° for oscillating the 90° pushout fluid motor assembly

through a corresponding 90° arc to sweep glassware articles from a dead plate through an arcuate path on to a continuously moving conveyor. The gear drive for oscillating the vertical shaft through 90°, also controls the delivery of air pressure to the fluid motor, through one air line or the other, in



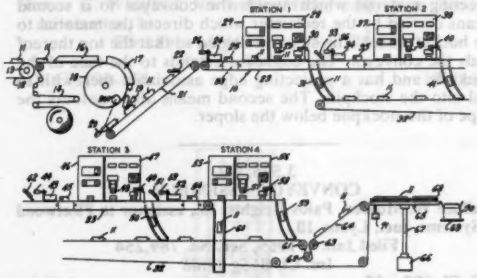
timed relation with the oscillating movement of the vertical shaft. Adjustment means are provided which permit adjusting the angle of the oscillating movement of the vertical shaft to slightly more or less than 90°, as desired, as well as for adjusting the orientation of the angle of oscillatory movement, without stopping the machinery.

3,595,366

CONVEYER STRUCTURE FOR PACKAGING MACHINES

James G. Johanski, Green Bay, Wis., assignor to Safeway Stores Incorporated, Oakland, Calif.

Division of Ser. No. 690,526, Dec. 14, 1967, Pat. No. 3,540,971.
This application May 13, 1969, Ser. No. 841,659
Int. Cl. B65g *47/82*
U.S. Cl. 198—24 **4 Claims**



Apparatus for the continuous wrapping, weighing and labeling of articles employs an article transporting system for feeding the output of a wrapping station to weighing and labeling stations. The transporting system comprises a pair of horizontal conveyors at different levels with an inclined conveyor therebetween having an ejector to impart a force to propel an article up the inclined conveyor before the next succeeding article reaches the inclined conveyor.

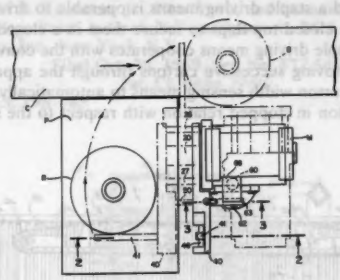
3,595,367

PUSH PLATE ASSEMBLY FOR LARGE DIAMETER GLASSWARE

Alphonse W. Faure, Philadelphia, Pa., assignor to C.S.S. Machine & Tool Co., Inc., Philadelphia, Pa.

Filed Aug. 14, 1969, Ser. No. 850,014
Int. Cl. B65g *47/24*
U.S. Cl. 198—24 **1 Claim**

To accommodate for large diameter bottles, the push plate of a 90° pushout in glass forming apparatus is provided with a long push finger which is automatically raised from the



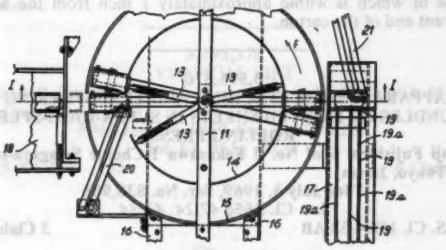
horizontal or push position to a vertical or clearance position during the retraction stroke of the piston.

3,595,368

DEVICE FOR TRANSFERRING ARTICLES FROM A DELIVERING MEANS TO A RECEIVING MEANS MOVING AT A DIFFERENT SPEED

Dante Mantovani, Via Sigonio 7, Bologna, Italy

Filed Sept. 5, 1969, Ser. No. 855,634
Claims priority, application Italy, Feb. 18, 1969, 1537 A/69
Int. Cl. B65g *47/82*
U.S. Cl. 198—25 **7 Claims**



Device for transferring articles, in particular nonaccumulable articles, from a delivery conveyor belt to a receiving conveyor belt parallel therewith, which comprises a rotatable article transferring disc arranged between said conveyors and carrying a plurality of containers near its periphery, pushers operated in coordination with the movement of said conveyor belts to push the articles from the delivery belt into a container or from a container onto the receiving belt and stop means for holding said containers during the action of said pushers.

3,595,369

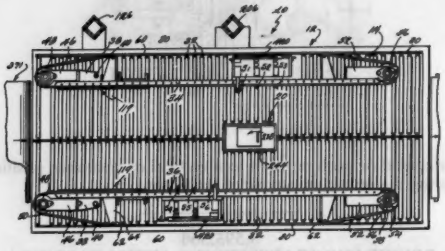
CARTON ALIGNING MECHANISM FOR CONVEYOR

Henri A. Boulay, West Warwick, and Joseph Silva, Cranston, both of, R.I., assignors to Bostitch Division of Textron, Inc., East Greenwich, R.I.

Division of Ser. No. 600,163, Dec. 8, 1966, Pat. No. 3,502,256.
This application Nov. 20, 1969, Ser. No. 877,545
Int. Cl. B65g *47/22*
U.S. Cl. 198—29 **2 Claims**

The specification discloses an apparatus for closing and stapling cartons of varying sizes of the type having a pair of end flaps and a pair of side flaps, which when opened are disposed in a coplanar relationship with respect to the sidewalls of the carton, the dimensions of the flaps measured in the direction of the outward extent thereof being generally equal to one-half the width of the carton. The apparatus includes means for automatically feeding successive open-

topped cartons of varying size through the apparatus, during which a flap closing mechanism is operable to close the open top flaps and a staple driving means is operable to drive staples into the closed top flaps to secure them in a closed relation. The staple driving means cooperates with the conveying means for moving successive cartons through the apparatus and with a carton width sensing means to automatically position the carton in stopped relation with respect to the staple



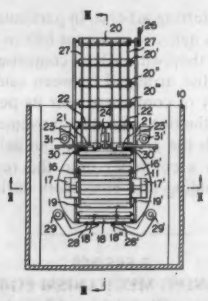
driving means in a plurality of different positions at which staples are driven, the arrangement being operable to automatically drive staples into the side flaps and the underlying end flaps only of each successive carton at positions spaced longitudinally in accordance with the width of the carton, the staples associated with each end flap being spaced apart a distance not exceeding a predetermined distance and at least one of which is within approximately 1 inch from the adjacent end of the carton.

3,595,370

APPARATUS FOR STACKING AND TRANSFERRING BUNDLES OF PRINTED SHEETS IN SUPER-HIGH-SPEED ROLLING PRESS

Yuji Fujishiro, 6 of No. 3 Fakazawa 1-Chome Setagaya-ku, Tokyo, Japan

Filed July 3, 1969, Ser. No. 838,986
Int. Cl. B65g *47/24, 47/34*
U.S. Cl. 198—33 AB **3 Claims**



Apparatus for stacking and transferring bundles of printed sheets in super-high-speed rolling press where a predetermined number of bundles is accumulated upon a turntable, said bundles being arranged in opposite direction to each other, to form a definite stack and then said stack is transferred out of the apparatus automatically and continuously by combination with a partly circular formed turntable having straight edges at the front and rear side thereof, front guide means provided adjacent to said straight edge at the front edge being able to swing automatically around its vertical axis to make passage for said turntables and to push the stack to transfer out, rear guide means provided adjacent to said straight edge at the rear edge acting to guide the dropping bundles and being capable of swinging automatically around their vertical axis to allow passage of the turntable and also being able to be raised up when the stack is to be transferred, and relay means which are made to swing down out of the passage of the turntable as it rotates.

3,595,371

MATERIAL RECLAIMER

Fred T. Smith, Aurora, Ill., assignor to Barber Greene Company, Aurora, Ill.

Filed Apr. 3, 1968, Ser. No. 718,466
Int. Cl. B65g *65/28*
U.S. Cl. 198—36 **5 Claims**

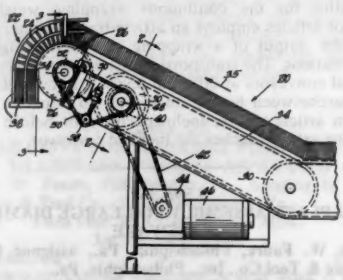
A self-propelled reclaimer for moving material from a stockpile. The reclaimer has a sloper for removing material from the face of the pile and a bucket wheel for removing material from in front and to the side of the reclaimer and a common conveyor receiving both streams of material. The sloper is carried by a tiltable boom which carries means for directing material which avoids the conveyor to a second means carried by the reclaimer which directs the material to the bucket wheel. The sloper is angled so that the top thereof leads the conveyor. The conveyor extends to the face of the stockpile and has a projecting edge associated therewith to seal into the stockpile. The second means also contours the slope of the stockpile below the sloper.

3,595,372

CONVEYOR ASSEMBLY

Wallace W. Mojden, Palos Heights, Ill., assignor to Fleetwood Systems, Inc., Lyons, Ill.

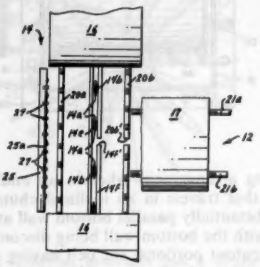
Filed Jan. 6, 1969, Ser. No. 789,254
Int. Cl. B65g *43/08*
U.S. Cl. 198—37 **1 Claim**



Conveyor or transfer apparatus for supplying container ends or similar objects to the operating station of a machine. The conveyor apparatus includes an end roller which is

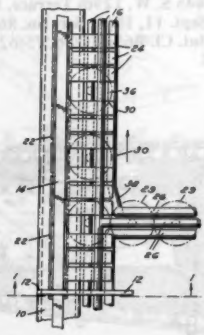
operable to transfer said objects from a conveyor track to a gravity chute, and drive means for said end roller. In order to regulate the supply of objects to said chute, there is provided overload disabling means associated with said drive means and responsive to drag placed on said end roller by an accumulation of objects in said gravity chute, said disabling means being operable to energize and deenergize said drive for the conveyor and thereby effect said regulation of the supply of objects to the gravity chute.

3,595,373
CONVEYOR TRANSFER STRUCTURE
Samuel C. Warren, Vanderburgh County, Ind., assignor to George Koch Sons Inc., Evansville, Ind.
Filed Apr. 9, 1969, Ser. No. 814,613
Int. Cl. B65g 47/00
U.S. Cl. 198—45 4 Claims



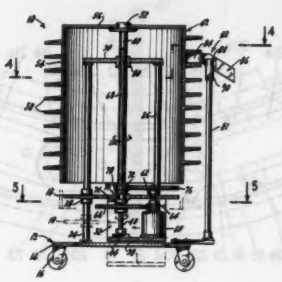
A conveyor transfer structure characterized by the use of magnetic means for controlling conveyor pallet movement at the intersection of two conveyor lines.

3,595,374
COLLECTING AND ELEVATING CONVEYOR
Homer G. Whitfield, Northville, Mich., assignor to Condeco Automation, Inc.
Filed Feb. 14, 1969, Ser. No. 799,202
Int. Cl. B65g 19/00
U.S. Cl. 198—50 17 Claims



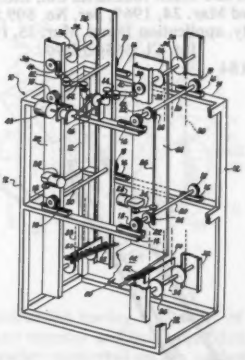
The invention pertains to improvements in conveyors for carrying parts such as automobile valves. The invention eliminates the need for any special entrance or feeding apparatus to the conveyor. The conveyor configuration itself and the configuration of the parts provide for the proper acceptance of the parts into the conveyor. The invention also provides for a torque limiting drive incorporated with the conveyor such that in the event of a jam the conveyor automatically oscillates back and forth until the jammed part is released.

3,595,375
MANUAL BATCH LOADER
Harold B. Kaufman, Jr., New York, and Leonard G. Fischer, College Point, both of, N.Y., assignors to DCA Food Industries, Inc., New York, N.Y.
Filed Oct. 30, 1969, Ser. No. 872,541
Int. Cl. B65g 29/00
U.S. Cl. 198—65 9 Claims



A manually loaded and automatically operable feeder for delivering units or products in succession to in-line continuous processing equipment which feeder includes a loading drum having a spiral shelf which receives thereon a manually loaded batch of units or products. The loading drum is rotated about its axis and displaced therealong to bring successive portions of its shelf past a predetermined unloading location at which the units or products are unloaded in succession.

3,595,376
VERTICAL LIFT
Roger R. Tonelli, Chicago, Ill., assignor to Radio Steel & Mfg. Co., Chicago, Ill.
Filed Jan. 27, 1969, Ser. No. 794,259
Int. Cl. B65g 15/14
U.S. Cl. 198—163 8 Claims

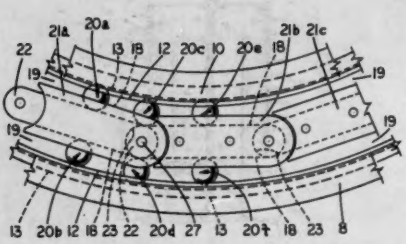


A vertical lift construction for moving articles from one level to another comprising a frame with endless conveyors located on opposite sides of the frame. Each of the conveyors carries a plurality of article supporting elements with the elements moving in the same direction on the inwardly facing side of the conveyors. Articles are adapted to be located on the respective article supporting elements so that the ends only of the articles are supported with the main body of the articles being suspended in unsupported fashion between the article supporting elements. The frames for supporting the conveyors are relatively movable by motorized means so that the span between article supporting elements can be readily changed for handling articles of different sizes.

3,595,377
CIRCULATING BALL CONVEYOR

Lyle E. McCoy, Norristown, and William L. Kuechler, Jenkintown, both of, Pa., assignors to Proctor & Schwartz, Inc., Philadelphia, Pa.

Filed Oct. 10, 1969, Ser. No. 865,320
Int. Cl. B65g *15/00*
U.S. Cl. 198—181 16 Claims

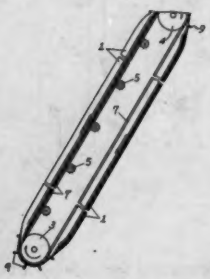


A conveyor comprising at least one articulated member such as a chain having a substantially continuous groove in at least one of the faces thereof formed by groove portions in corresponding faces of the elements comprising the articulated member, at least one track member having a groove in opposition to said substantially continuous groove and defining therewith a race containing a plurality of balls, the dimensions of the race and balls being so related that the balls are stably contained within the race, the race being nonlinear at least in part. The relationship of articulated member and track member permits proper circulation of the balls within the race without locking and permits movement of substantial loads in an articulating manner over greater distances while under a substantially reduced power requirement.

3,595,378
TUBULAR BELT CONVEYOR

Kiyomi Kamisaka, Tokyo, Japan, assignor to Unitika Ltd., Hyogo, Japan and Mach Industries Co., Ltd., Tokyo, Japan

Filed Mar. 24, 1969, Ser. No. 809,850
Claims priority, application Japan, Mar. 25, 1968, 43-18977
Int. Cl. B65g *37/00*
U.S. Cl. 198—184 5 Claims

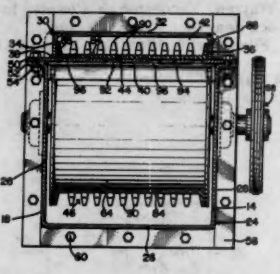


A pipe-shaped tubular belt conveyor. The conveyor is a rubber pipe having a seam extending along the entire length thereof. The outer surface of the pipe on the side opposite the seam side has a band mounted thereon which has a large number of cogs therein engaging with driving or supporting sprockets. The rubber pipe is an endless pipe and runs around supporting rolls at both ends. It is flattened as it runs around the supporting rolls.

3,595,379
APPARATUS AND METHOD FOR CONVEYING AND ELEVATING SUBSTANCES

David R. Campbell, 4163 South 2200 W., Salt Lake City, Utah

Continuation-in-part of application Ser. No. 596,003, Nov. 21, 1966, which is a continuation of application Ser. No. 374,778, June 12, 1964, now abandoned. This application Mar. 18, 1968, Ser. No. 713,746
Int. Cl. B65g *15/42*
U.S. Cl. 198—198 10 Claims

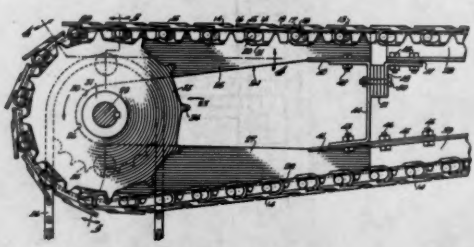


A conveying arrangement wherein an endless belt has a working run that travels in an inclined chute having a top wall and a substantially parallel bottom wall attached thereto by sidewalls with the bottom wall being discontinuous and interrupted by cutout portions, the belt having a bearing face slidably disposed on the bottom wall and closing off the cutout portions so as to complement the top and sidewalls in achieving a conduit effect in which the working run travels. The belt has a working face provided on its opposite sides with upstanding endless flanges and, intermediate the side flanges, with a pattern of spaced and staggered projecting nubs that extend substantially to the undersurface of the top wall for moving substances through the chute with the belt being driven through the chute at a linear speed greater than the fall back speed of a conveyed substance on the working face of the belt.

3,595,380
SPROCKET DRIVE, BELT RETAINER AND GUIDE MECHANISM FOR ARTICULATED LINK CONVEYOR BELTS

Eldon S. Miller, 6645 S. W. 129th Terrace, Miami, Fla.

Filed Sept. 11, 1969, Ser. No. 864,929
Int. Cl. B65g *17/06*, *15/62*
U.S. Cl. 198—202 7 Claims



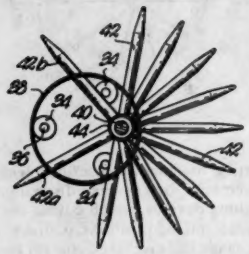
A sprocket drive, belt retainer and guide mechanism for articulated link conveyor belts, the individual links of which are provided along their undersides with slide passageways of substantially T-shaped cross-sectional configuration and a pair of laterally spaced recesses for the reception of sprocket teeth, one on each side of said passageways, is described. A U-shaped guide member having an outer peripheral T-shaped track received in the belt link slide passageways guides the belt around the bight of the guide member, in which is trans-

versely arranged a drive shaft carrying a pair of spaced sprocket wheels engaged in the sprocket teeth recesses of the belt links for moving the belt along the track in retaining relation with respect thereto.

3,595,381
MATERIAL UNLOADING DRUM

Erza Cordell Lundahl, Providence, Utah, assignor to Hesston Corporation, Inc., Hesston, Kans.

Division of Ser. No. 603,881, Dec. 22, 1966. This application May 5, 1969, Ser. No. 851,509
Int. Cl. B65g *29/00, 3/44*
U.S. Cl. 198—211 **4 Claims**

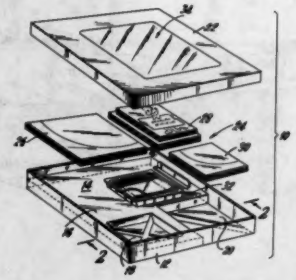


A rotor for a material unloader has a drum that rotates during its reciprocation along a material discharge outlet. A shaft extending through the drum is rotated by a prime mover exteriorly of the drum and a spiral row of fingers on the shaft extend through slots in the drum to rotate the latter and strip the material from the fingers.

3,595,382
DISPLAY CONTAINER

Heinz P. Hofer, Upper Grandview, N.Y., assignor to Swissmart, Inc., New York, N.Y.

Filed June 25, 1969, Ser. No. 836,308
Int. Cl. H65d *25/14, 5/58*
U.S. Cl. 206—45.31 **4 Claims**



A display container comprises a bottom box portion having a tray insert thereon defining a first main level for accommodating a plurality of display elements such as napkins, or letter correspondence cards, etc. and a plurality of additional levels for accommodating utensils or other device which may be contained in separate additional container elements of a size accommodated at the respective levels. The container base is closed by a cover having a transparent window therein which is large enough to permit viewing of all of the elements in the container arranged at the various levels.

3,595,383
MAILING DEVICE

Thomas E. Boylan, Fairfield, Conn., assignor to Norcross, Inc., New York, N.Y.

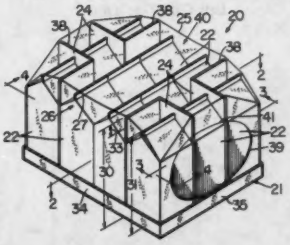
Filed Apr. 17, 1969, Ser. No. 817,070
Int. Cl. B65d *73/00*
U.S. Cl. 206—62 **5 Claims**

An elongated sheet is divided into four panels by three score lines with the two intermediate panels containing openings, so that when these panels are folded about their common score line, the openings are in face to face alignment. An article is mounted on one of the intermediate panels so that it is visible through the openings. The two end panels are foldable about their corresponding fold lines to cover the openings and are fastened for mailing. These intermediate panels have indicia and designs thereon for mailing.

3,595,384
PACKAGE CONSTRUCTION

Henry O. Sargent, Grottoes, Va., and Thomas C. Gresge, Bloomfield Hills, Mich., assignors to Reynolds Metals Company, Richmond, Va.

Filed Oct. 30, 1968, Ser. No. 771,920
Int. Cl. B05d *71/00*
U.S. Cl. 206—65 S **8 Claims**



A package construction having a plurality of articles supported on a support therefor and being provided with at least one columnar member supported on the support and having a portion which extends above the articles. An overwrap is shrunk around the support, articles, and columnar member to provide a high strength unitary package.

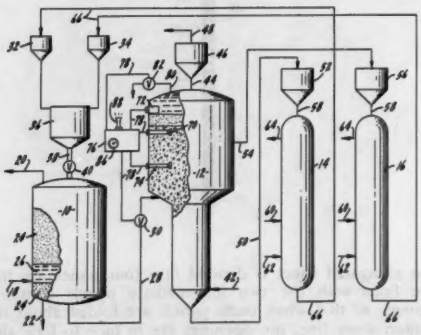
3,595,385
METHOD AND APPARATUS FOR CONTROLLING LEVELS IN AN ION EXCHANGE RESIN SEPARATOR

Joseph H. Duff, Basking Ridge, N.J., assignor to Union Tank Car Company, Chicago, Ill.

Filed June 2, 1969, Ser. No. 829,527
Int. Cl. B03b *13/00*
U.S. Cl. 209—1 **20 Claims**

An improved method and apparatus are provided for controlling both the resin level and the quantity of fines above

the resin in an anion-cation exchange resin separation column. In carrying out the method, the presence of fines is sensed at a given level within the resin separation zone, and resin is delivered to the zone when its level falls below this given level. The presence of fines within the separation zone is also sensed at a second level above this given level. If fines are present, an alarm may be sounded, fines may be removed from the separation zone, or both the alarm and fines removal functions may be performed.



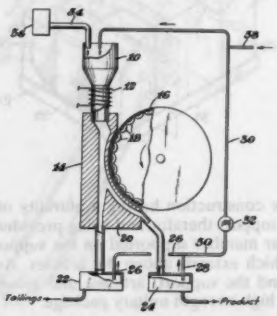
The apparatus comprises an ion exchange resin separation column having a bead resin level sensor in an upper portion and a fines level sensor above the bead resin level sensor. Valve means are controlled responsive to a signal from the bead resin level sensor in order to maintain the proper bead resin level with the column. The apparatus may alternatively employ alarm means, fines removal means, or a combination thereof, operating responsive to a signal from the fines level sensor.

3,595,386

PROCESS FOR BENEFICIATION OF NONMAGNETIC MATERIAL

Joseph R. Hradel, 6482 South Mission Road, Mount Pleasant, Mich.

Filed Jan. 27, 1969, Ser. No. 794,103
Int. Cl. B03c *1/00*
U.S. Cl. 209—8 **6 Claims**



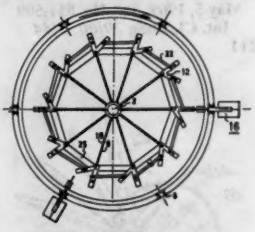
A novel process for beneficiating nonmagnetic ores and other source materials, particularly lean iron ores, wherein paramagnetic material in such ores is given a temporary positive magnetic susceptibility, passed within the field of a moving permanent magnet system before the material decays to its natural state, and the so activated paramagnetic substance separated by deflection toward the magnet system and recovered from nondeflected diamagnetic material in admixture therewith.

3,595,387

SORTING MACHINE

Jacob H. Mosterd, Stationweg 117, Barneveld, Netherlands

Filed Mar. 21, 1969, Ser. No. 809,338
Claims priority, application Netherlands, Mar. 22, 1968, 6804154
Int. Cl. B07c *3/06*
U.S. Cl. 209—74 R **6 Claims**



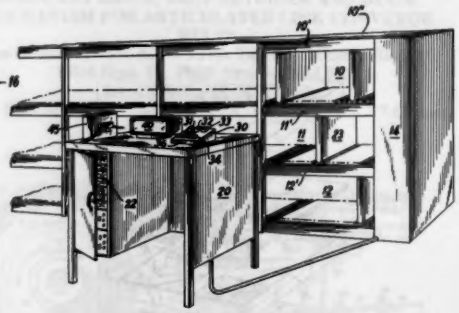
A weight-sorting machine is described with guides, which support stop members for engaging discharge control means of moving weighing devices, which guides are adjustable into at least two predetermined positions, in one of which the stop members can engage the discharge control means and not so in the other position. Preferably the guides of different discharge stations are coupled for simultaneously adjusting the guides of the stations.

3,595,388

RANDOM ACCESS STORE FOR CARDS, FILE FOLDERS, AND THE LIKE

John Castaldi, Brooklyn, N.Y., assignor to Supreme Equipment & Systems Corporation

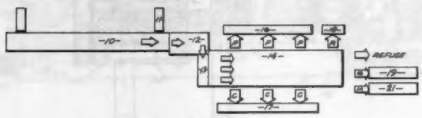
Division of Ser. No. 680,642, Nov. 6, 1967, Pat. No. 3,519,832, which is a continuation-in-part of application Ser. No. 430,330, Feb. 4, 1965, now abandoned.
This application Nov. 25, 1969, Ser. No. 877,571
Int. Cl. B07c *3/16*
U.S. Cl. 209—111.8 **19 Claims**



A random access store for cards, file folders and the like, in which the folders are stacked face to face. The folders are optically edge-coated and sensed simultaneously by a plurality of moving carriages, driven by a single cable, which continuously compares the sensed code to the command code and ejects the desired folder. The optical reader senses rectilinearly (along the same line as the light source) and the coded signal is automatically negated from mispositioned folders. Folder alignment regardless of packing density is provided by magnetic clutching in cooperation with an array of folder guiding slots. Manual entry of the file folders into the store is random and may take place simultaneously with the automatic withdrawal. Towards this end, a feed through access is provided which automatically gates and raises the

magnetic clutches to permit ejection of the desired folder. Further refinements described include ejected folder collection; automatic input; a memory adjunct; and remote signalling.

3,595,389
RECLAMATION METHOD AND APPARATUS
George W. Morgan, 2640 East Norm Place, and Douglas S. Whitney, 2616 East Norm Place, both of Anaheim, Calif.
Filed Mar. 5, 1970, Ser. No. 16,685
Int. Cl. B07c 7/04
U.S. Cl. 209—125 17 Claims



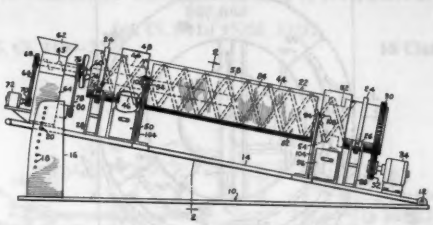
Apparatus and method for economically separating reusable paper, cardboard, rags, metal, glass and the like from mixed household refuse is described. A separation station, preferably at a refuse transfer point, has a plurality of feed conveyors for moving mixed refuse past a plurality of work stations where valuable components of the mixed refuse are removed. These components are placed in receiving hoppers which communicate by chutes with a matrix of conveyor belts below the floor level of the work stations. Each work station has a plurality of such hoppers, each for receiving a particular component such as, for one example, cardboard, and the several cardboard hoppers feed onto "cardboard" conveyors for continuously moving the cardboard to a baling station or the like. Separate conveyors carry other components, such as metal, glass, paper or the like to separate processing stations. Some of the conveyors, preferably those handling large volume, run transverse to the feed conveyors and in opposite directions for carrying the bulkiest products to separate locations. Other conveyors at different elevations from the transverse conveyors run parallel to the feed conveyors for moving other products. Thus, each feed belt has a plurality of work stations, and each work station has a plurality of product-receiving hoppers. Each product-receiving conveyor serves a plurality of product-receiving hoppers of the same kind. Thus a large volume of refuse can be sorted rapidly and economically with most of the material handling being done automatically.

3,595,390
ORE FLOTATION PROCESS WITH POLY(ETHYLENE-PROPYLENE)GLYCOL FROTHERS
Robert Ben Booth, Stamford, Conn., assignor to American Cyanamid Company, Stamford, Conn.
Filed June 18, 1968, Ser. No. 737,811
Int. Cl. B03d 1/02
U.S. Cl. 209—166 2 Claims

A process for collecting mineral values from an ore which comprises mixing ground ore with water to form an ore pulp, aerating said pulp in the presence of an effective amount of frother selected from the group consisting of poly(ethylene-propylene) glycols and lower alkyl monoethers of poly(ethylene-propylene) glycols having an average molecular weight in the range of about 150 to about 2,500, each of said frothers being prepared from ethylene oxide and propylene oxide, each of said oxides being employed in amounts of between 5 and 95 mole percent based upon the amount of alkylene oxide reacted and recovering mineral values from the resulting froth.

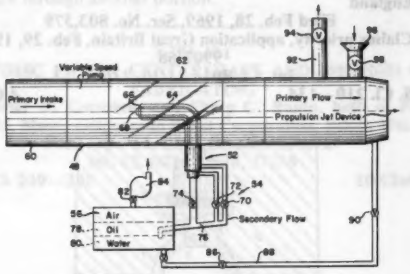
3,595,391
MAGNETIC SEPARATOR
Byron C. Schmid, 2101 16th St. N.W., Washington, D.C.
Filed Feb. 24, 1969, Ser. No. 801,482
Int. Cl. B03c 1/14
U.S. Cl. 209—225 10 Claims

A rotating drum, slightly inclined from the horizontal, is provided adjacent opposite ends with discharge openings, and the interior of the drum is provided with spiral ribs which tend to feed material toward the higher end of the drum to be discharged through the opening adjacent such end of the drum. Magnetic means is arranged externally of the drum and longitudinally thereof to cause pieces of magnetic



material in the mixture to adhere to the side of the drum to be carried upwardly and then released to drop to the bottom of the drum, such material dropping vertically rather than perpendicularly to the axis of the drum so that it gradually works its way toward the lower end of the drum to be discharged through the lower discharge opening.

3,595,392
METHOD OF AND APPARATUS FOR SEPARATING FLUIDS HAVING DIFFERENT DENSITIES
Arthur L. Markel, Miami, Fla., assignor to Reynolds Submarine Services Corporation, Miami, Fla.
Filed June 13, 1969, Ser. No. 833,105
Int. Cl. E02b 15/04; B01d 17/00
U.S. Cl. 210—73 30 Claims

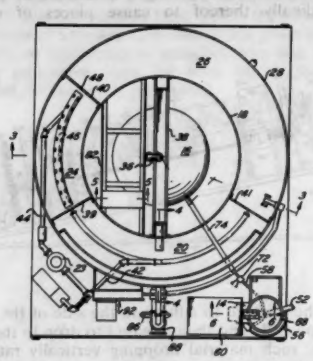


A method of and apparatus for separating fluids having different densities utilizing an axial flow pump which achieves vortex separation without emulsification of the fluids. A Pitot tube positioned downstream from the axial flow pump separates substantially all of a lighter density fluid from the discharge of the axial flow pump and delivers the fluid to a settling tank where gravity separation of the different density fluids is achieved very rapidly because of the absence of emulsification. A heavier density fluid which bypasses the Pitot tube is used to provide propulsion for a collecting unit. The fluids to be separated are contained by means of a floating boom attached to the collecting unit. The latter is provided with a weir or floating skimmer means which facilitates the delivery of the fluids to be separated to the axial flow pump.

3,595,393
WASTE WATER TREATMENT SYSTEM
Matthew A. Messa, Cedarbrook Hills Apts. Bldg. 1, Apt. #604, Wyncote, Pa., and David Brown, Lansdale, Pa., assignors to Matthew A. Messa, Wyncote, Pa., by said David Brown
Filed Sept. 19, 1968, Ser. No. 760,867
Int. Cl. B01d 21/01, 23/14
U.S. Cl. 210—103 13 Claims

A waste water treatment system is disclosed wherein water to be treated is processed to remove turbidity, solids, organics, surfactants, colloidal suspensions, detergents, etc. An

upflow clarifier is partially surrounded by a filter chamber, an adsorption chamber, and a storage chamber. The water to be treated is mixed with a dry coagulant which forms a floc



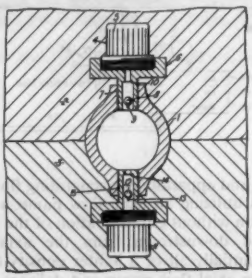
blanket in the upflow clarifier. Detection means are provided to limit the upper limit of the floc blanket and partially withdraw the contents of the clarifier when the floc blanket rises above a predetermined level.

3,595,394

WATER-DEMINERALIZING APPARATUS WITH A CENTRAL REGENERANT COLLECTING AND DISTRIBUTING DEVICE

Frank Charles Blight, Sunbury-on-Thames, Middlesex, England, assignor to The Permutit Company Limited, London, England

Filed Feb. 28, 1969, Ser. No. 803,379
Claims priority, application Great Britain, Feb. 29, 1968, 9907/68
Int. Cl. B01d *23/10, 23/24*
U.S. Cl. 210—134 **4 Claims**



In the regeneration of a mixed bed of cation and anion resins which are separated into layers, these being individually regenerated, the effluent regenerant of the anion layer is collected at points above the interface between the layers and the regenerant of the cation layer is introduced at points below the interface. A central device for collecting and distributing regenerant has inlets on the upper side and outlets on the under side, and all the inlets and outlets are controlled by nonreturn valves.

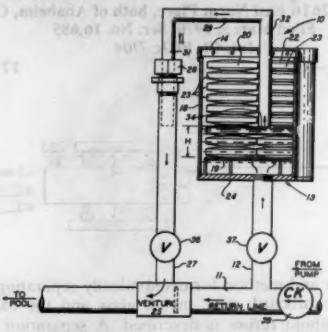
3,595,395

AUTOMATIC CHLORINATORS FOR SWIMMING POOLS

Walter C. Lorenzen, Hacienda Heights, Calif., assignor to Anzen Products, Arcadia, Calif.

Filed Oct. 18, 1968, Ser. No. 768,729
Int. Cl. B01d *33/38*
U.S. Cl. 210—169 **6 Claims**

A pellet magazine in which solid water-soluble chlorine pellets are stacked is connected by a secondary line to the return line of a conventional pool water recirculation system downstream of the recirculation pump. The water flows upwardly into the pellet magazine to wet some of the pellets. A venturi unit farther downstream of the return line creates suction to draw chlorine solution from the wetted pellets through one leg of a U-shaped suction tube having another



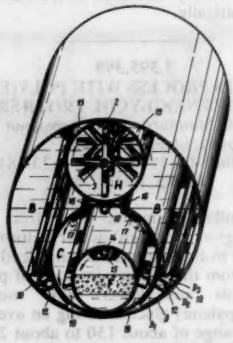
leg suspended in the pellet magazine. The tube leg is vertically movable within the magazine. Its inlet end can thus be at any desired level to control the amount of water in contact with the pellets. Treated liquid flow is from the downstream portion of the return line into the pellet magazine and thence through the suction tube and the venturi back into the return line to be mixed for presentation to the pool.

3,595,396

ARRANGEMENT FOR WATER TREATMENT

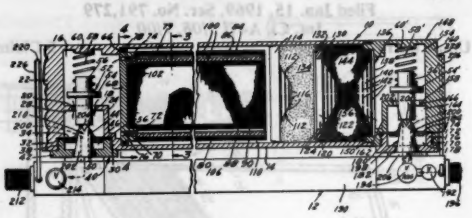
Svatopluk Mackrle, No. 5 Pavlikova, Brno, and Vladimir Mackrle, No. 8 Na Micance, Praha 6, both of, Czechoslovakia

Filed Oct. 29, 1969, Ser. No. 872,283
Claims priority, application Switzerland, Nov. 8, 1968, 16724/68
Int. Cl. B01d *21/08*
U.S. Cl. 210—203 **9 Claims**



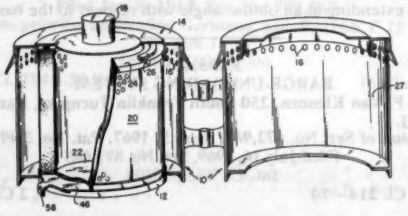
Arrangement for water treatment using for removal of impurities coagulation agents with subsequent separation of the thus created floccular suspension by means of a perfectly fluidized sludge blanket. The arrangement comprises a sludge blanket compartment, a sludge concentrator compartment and possibly also a homogenizer and filter compartment, most of which compartments arranged within cylindrical vessels placed horizontally, with the bottom part of the sludge blanket compartment determined by the mantles of at least two adjacent cylindrical vessels. The arrangement is particularly designed for larger size water treatment plants.

3,595,397
FILTER APPARATUS
Ralph L. Abos, Whittier, Calif., assignor to Anti-Pollution Devices, Inc., Industry, Calif.
Filed May 23, 1969, Ser. No. 827,340
Int. Cl. B01d *27/02, 27/08*
U.S. Cl. 210—232 8 Claims



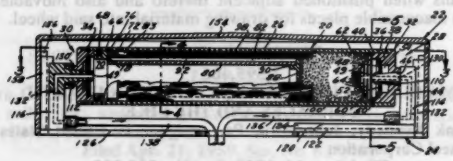
A disposable water-filtering apparatus having a pressure regulator and shutoff valve, and self-sealing disconnect means.

3,595,398
FILTER ASSEMBLY HAVING A REPLACEABLE FILTER ELEMENT
Donald J. Cook, Barrington, R.I., assignor to Fram Corporation, East Providence, R.I.
Filed Nov. 5, 1969, Ser. No. 874,124
Int. Cl. B01d *27/08*
U.S. Cl. 210—232 9 Claims



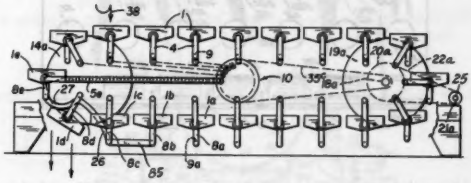
Filter assembly in which filter element is installed through opening in side of housing, and a seal between an end of the filter element and the adjacent housing wall prevents fluid from bypassing the filter element.

3,595,399
FILTER
Ralph L. Abos, Whittier, and Carl A. Stuewe, Hacienda Heights, both of, Calif., assignors to Anti-Pollution Devices, Inc., City of Industry, Calif.
Continuation of application Ser. No. 805,690, Mar. 10, 1969, now abandoned. This application Nov. 25, 1969, Ser. No. 873,724
Int. Cl. B01d *27/02*
U.S. Cl. 210—266 16 Claims



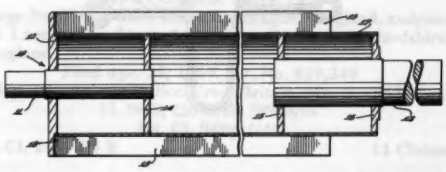
A throwaway, low-pressure, water-filtering apparatus adapted to be easily and quickly installed and removed and/or replaced.

3,595,400
CONVEYOR-TYPE FILTER
C. Lynn Peterson, Salt Lake City, Utah, assignor to Peterson Filters & Engineering Company, Salt Lake City, Utah
Continuation of application Ser. No. 480,969, Aug. 19, 1965, now abandoned. This application July 8, 1969, Ser. No. 845,644
Int. Cl. B01d *35/08, 33/32*
U.S. Cl. 210—327 16 Claims



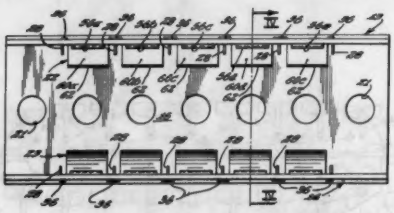
A vacuum filter including a pair of laterally spaced endless conveyors rotating about at least two common axes and carrying containers in articulated, closely spaced arrangement. Each container is boxlike member having upright sides, closed bottom, and an open top with drainage outlet in bottom and with bottom pivotally connected to conveyors. Extensible conduits have swivel connection with container outlets and filter media in each container covers its outlet. Plate valve rotating conjointly with conveyors has swivel connection with each conduit and provides filtration pressure to the media through a portion of each cycle and cake removal pressure through another portion.

3,595,401
POLYDISC FILTER CENTERSHAFT AND METHOD OF FABRICATING
Alexander D. Cormack, and Philip G. Bump, both of Pittsfield, Mass., assignors to Beloit Corporation, Beloit, Wis.
Filed Sept. 22, 1969, Ser. No. 859,727
Int. Cl. B01d *33/38, 33/36*
U.S. Cl. 210—331 10 Claims



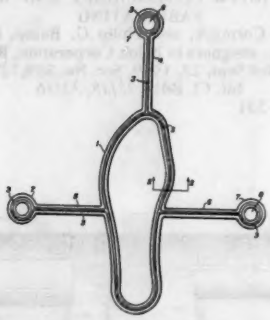
A polydisk filter centershaft is fabricated by first welding a plurality of spaced-apart bars around a conventional center pipe shaft weldment. The outside diameter across these bars is machined to give dimensionally stable reference point. A pair of stainless steel plates are then formed into the skin of the centershaft by cutting rectangular holes therein and rolling each of the plates to form one-half of the outside of the centershaft as elements of semicircular cross section. Troughs for carrying the filtered liquid are rectangular holes. One end of these troughs are blocked off and the opposite, or discharge, ends are to be fit into openings cut in a semicircular plate which is formed to fit the center pipe shaft. The two skin assemblies are slid over the pipe shaft and are plug welded to the bars. The two axial seams on the skin are then welded to form a continuous outer surface of the shaft. The filter sectors are located by sets of tabs or projections which fit into the rectangular holes and are clamped to the shaft by rods with a gasket sealing the sector to the shaft.

3,595,402
MODULAR TERMINAL BLOCK MOUNTING RACK
Charles W. Smaczny, Chicago, Ill., assignor to The Pyle-National Company, Chicago, Ill.
Filed Apr. 16, 1969, Ser. No. 816,715
Int. Cl. A47f 7/00
U.S. Cl. 211—26 11 Claims



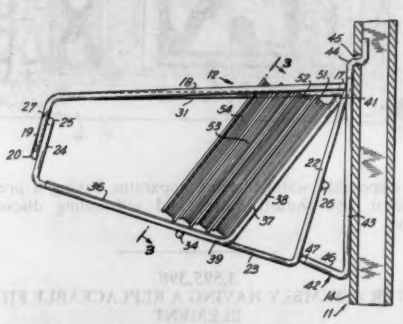
A modular mounting rack for mounting a plurality of electrical terminal blocks comprising a U-shaped channel member having a bottom wall and a pair of vertical sidewalls and a pair of mounting brackets disposed respectively adjacent and carried on said sidewalls, said mounting brackets being constructed and arranged to provide a plurality of modules each capable of receiving an individual terminal block in releasable snap-in relation. A handtool is provided to release the terminal blocks from the mounting rack.

3,595,403
APPARATUS FOR SUSPENDING WET FOOTWEAR
Robert J. Lane, 4710 Longwood Ave., Parma, Ohio
Filed Feb. 10, 1969, Ser. No. 797,854
Int. Cl. A47f 7/08
U.S. Cl. 211—38 7 Claims



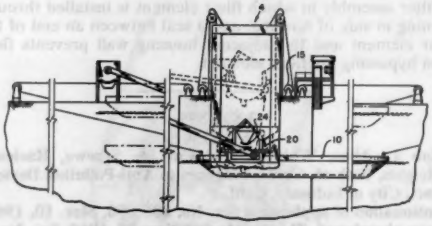
Apparatus for suspending wet footwear from a support, such as a clothesline, curtain rod, wall peg, or other projection including a flexible loop which may be formed of a plastic material, such as polyethylene, polyvinyl chloride, or Teflon, or it may be formed of wire. If the loop is formed of a plastic material, a plurality of spaced straps or hangers are formed with their inner ends integral with the loop and each is provided with an aperture at its outer end. The loop is shaped to surround an inverted footwear piece and suspend it therein and the hangers which pass over the toe piece of the footwear are connected together by an S-shaped hook, one portion of which may be passed over a suitable support, such as a clothesline, curtain rod, or other projection. When the loop is formed of wire which surrounds the foot piece, the hangers are formed of pieces of wire, each having a hook at its inner end and at its outer end. The inner portions of the hangers pass over the inverted toe end portion of the foot piece and the hooks on the outer portions of the wire hangers are arranged to pass over the support to hold the loop and the shoe or boot pieces in a suspended state. To prevent movement of the wire strips upon the loop, the loop is crimped at the opposite sides of the hooks on the inner wire pieces or hangers.

3,595,404
SHELF
Arthur Goldstein, Scarsdale, N.Y., and Theodore Sobel, South Orange, N.J., assignors to Butler Industries, Inc., Newark, N.J.
Filed Jan. 15, 1969, Ser. No. 791,279
Int. Cl. A47f 5/08, 7/00
U.S. Cl. 211—49 5 Claims



A shelf for articles of uniform height and each having a thickness in which the shelf is so arranged that the articles will lie back against the back of the shelf but will lie in a position in which an overlying article does not completely overlap the article which it overlies in order that visual observation permits immediate examination of every article on the shelf. The shelf base and back are tilted rearwardly with the back extending at an obtuse angle with respect to the base.

3,595,405
BARGE-UNLOADING SYSTEM
Jack P. Van Kleunen, 250 South Franklin Turnpike, Ramsey, N.J.
Division of Ser. No. 672,949, Sept. 5, 1967, Pat. No. 3,497,054
Filed July 16, 1969, Ser. No. 871,065
Int. Cl. B65g 63/00
U.S. Cl. 214—14 2 Claims

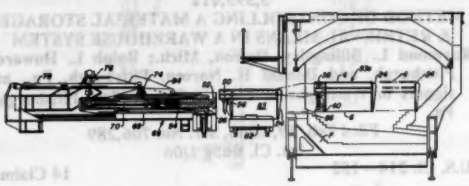


A barge-unloading apparatus having means for picking up material and depositing it on a conveyor in combination with a scraper device movable to feed material to the pickup means when positioned adjacent thereto and also movable into inaccessible places for drawing material into said wheel.

3,595,406
MATERIAL-CHARGING BOX FOR OPEN-HEARTH FURNACES AND THE LIKE
Frank Kennedy, Johnstown, Pa., assignor to United States Steel Corporation
Filed Apr. 14, 1969, Ser. No. 815,885
Int. Cl. F23k 3/00
U.S. Cl. 214—29 3 Claims

The box of the invention is composed of an upper frame portion having two forwardly extending arms formed with

longitudinal slideways therealong and a pusher plate depending from one end of the frame between the forwardly extending arms; and a lower open-top trough portion having open ends, sidewalls and a bottom adapted to contain material to be charged. The trough is formed with guides along its sidewalls which cooperate with the slideways of the frame to effect sliding relative movement of the frame and trough portions. The pusher plate of the frame is adapted to fit between



the sidewalls of the trough for sliding movement along the length of the trough when the trough and frame are moved relative to each other. The frame is provided with a pocket at its rear end for accommodating the head of a charging peel whereby the box is manipulated. The upper rear end of the trough portion is provided with a crossbar engageable by detachable hooks for controlling movement of the trough relative to the frame.

3,595,407

TRANSLOADING INSTALLATION FOR AIR FREIGHT CONTAINERS

Helmut Muller-Kuhn, Mulheim Ruhr; Klaus Walkhoff, Essen, and Uwe Lichtenford, Essen-Werden, all of, Germany, assignors to Fried Krupp Gesellschaft Mit Beschrankter, Haftung Essen, Germany

Filed Jan. 8, 1969, Ser. No. 789,869

Claims priority, application Germany, Jan. 8, 1968, P 15 56 598.7

Int. Cl. B65g *67/00*

U.S. Cl. 214—38 BA **16 Claims**

A crane apparatus and movable pallet means are provided for transfer of airfreight containers through upper and lower intermediate storage and sorting places adjoining a stopped aircraft. A bridge platform is adjustably supported to serve for equalization of height differences with respect to the aircraft and intermediate tracks equipped for shifting the containers longitudinally and transversely of symmetrical roller-equipped halves of intermediate storage and sorting places complementary to rows of containers parallel to the longitudinal axis of the aircraft. Pallet means are transported on underside track air cushions to the intermediate storage and sorting place. A U-shaped crane carriage and holding device are provided including gripping means with an open-bottom carrier frame. Rollers are provided to facilitate on-off movement of containers and including the air cushion on an underside of at least one topside roller-equipped track.

3,595,408

SYSTEMS FOR STORING AND TRANSPORTING LADINGS

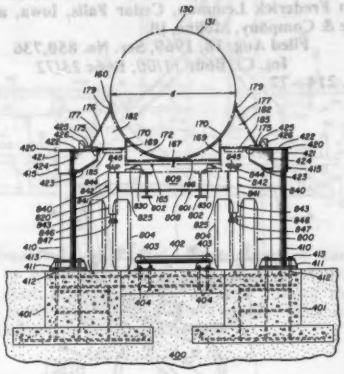
Ira C. Eddy, Mansfield, La., and William A. Taylor, Sharpsville, Pa., assignors to General American Transportation Corporation, Chicago, Ill.

Filed Apr. 21, 1969, Ser. No. 817,907

Int. Cl. B65g *67/02*

U.S. Cl. 214—38 CC **18 Claims**

There is disclosed herein systems for storing and for transporting tanks for containing ladings, and the components thereof, including a tank having a first bolster disposed adjacent to one end thereof and a second bolster disposed adjacent to the other end thereof, a stationary support station including a first pair of spaced-apart support posts disposed on opposite sides of a longitudinal axis and a second pair of spaced-apart support posts disposed on opposite sides of the longitudinal axis and spaced from the first pair of support posts, the first and second support posts carrying first and second support structure respectively, the first and second support structures being shiftable between receiving positions and supporting positions, the tank bolsters and the support posts and the support structures being arranged so that the tank bolsters can be positioned upon the support structures



when the support structures are in the supporting positions thereof, a road vehicle including a frame provided with road wheels and having a first body bolster disposed adjacent to one end thereof and a second body bolster disposed adjacent to the other end thereof, the tank bolsters and the body bolsters being arranged so that the tank bolsters can be positioned respectively on the body bolsters, the support posts in each pair of support posts being spaced-apart a distance to receive the road vehicle therebetween with the tank mounted thereon when the support structures are in the receiving positions thereof, and lifting means on the frame for causing relative vertical movement between the tank and the support structures.

3,595,409

SIDE LOADER VEHICLES

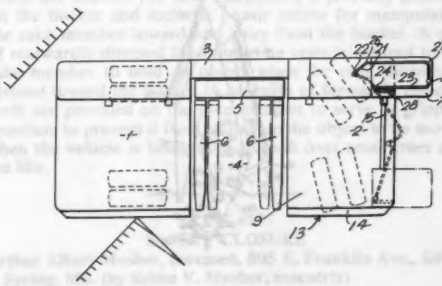
George Neville Bowman-Shaw, Toddington, England, assignor to Lancer Boss Limited, Leighton Buzzard, Bedfordshire, England

Filed Apr. 25, 1969, Ser. No. 819,249

Claims priority, application Great Britain, May 9, 1968, Dec. 11, 1968, 22079/68; 58968/68

Int. Cl. B60p *1/46*

U.S. Cl. 214—75 R **11 Claims**



A side loader vehicle comprising front and rear body portions respectively supported on front and rear road wheels

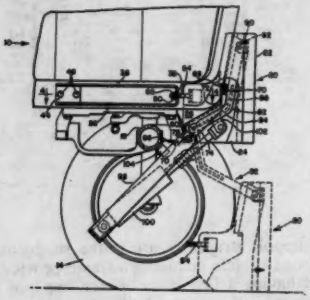
and interconnected by a backbone along one side of the vehicle, a recess in the opposite side of the vehicle extending substantially to the backbone, a fork mast load-lifting assembly mounted for power-operated movement in the recess transversely of the vehicle, guide means for a driver's cab extending across one end of the vehicle, a driver's cab mounted to move with respect to the guide means transversely of the vehicle, and power-operated means drivingly coupled to the cab to move the cab along the guide means.

3,595,410

TRACTOR-MOUNTED POWER ASSIST MEANS FOR ELEVATING FRONT-END WEIGHTS

Norman Frederick Lemmon, Cedar Falls, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Aug. 18, 1969, Ser. No. 850,736
Int. Cl. B60r *11/00*; B66c *23/72*
U.S. Cl. 214—77 **16 Claims**



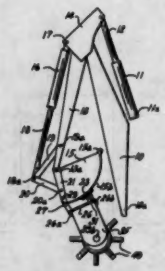
A hydraulic cylinder support bracket is pivotally suspended from underneath the central forward end of a tractor. A lever arm is pivotally interconnected between a front-end weight resting on the ground and the underside of the tractor forwardly of the hydraulic cylinder support bracket. Extension of the hydraulic cylinder elevates the front-end weight to a position for connection to the front of the tractor.

3,595,411

ROLLER ATTACHMENTS TO HYDRAULIC BACKHOE

Eugene O. Ables, 620 Edgewood Drive, Topeka, Kans.

Filed June 23, 1969, Ser. No. 835,642
Int. Cl. A01b *29/04*; E02f *3/00*
U.S. Cl. 214—145 **3 Claims**



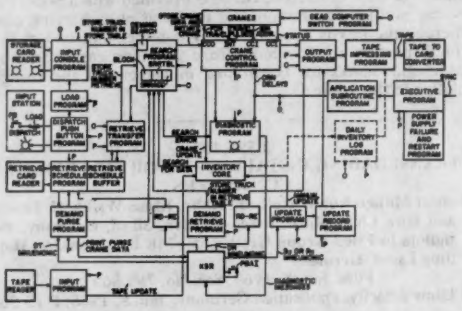
Roller means removably attachable to the back side of the digging bucket of hydraulic backhoes operable, when the open face of the bucket is facing at least to some degree upwardly, to roll and compact earth; the effective rolling width of the roller means being substantially equal to the width of the digging bucket; a sheep's foot roller useable as such roller means with cleaning plates provided in association therewith; alternate roller means provided of substantially continuous available rolling surface to handle silt-rolling operations.

3,595,412

METHOD OF CONTROLLING A MATERIAL STORAGE & RETRIEVAL MEANS IN A WAREHOUSE SYSTEM

Raymond L. Billingsley, Detroit, Mich.; Ralph L. Howard, Pittsburgh, and Donald H. Noreen, Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Feb. 19, 1968, Ser. No. 706,289
Int. Cl. B65g *1/06*
U.S. Cl. 214—152 **14 Claims**



An automatic large-scale warehousing system including a warehouse with a large number (8,100) of bins (B) arrayed in aisles AS for storing enough products (17,000) to service a complex of manufacturing plants (26 automobile assembly plants). A crane CR is associated with each aisle and is actuable to store or retrieve the material in the different bins B. A Computer (FIG. 6) is associated with this system of bins and part of the memory core (Inventory Core) of the computer carries an inventory of the storage; that is, an identification of each bin and the material stored in this bin. The core of the Computer is also programmed so that in response to selective commands on punchcards, the cranes are automatically actuated either to store material in open bins, identified in the Computer as open, or to retrieve material from the bins where they are stored. The Inventory Core of the Computer is automatically changed to record each storage and each retrieval. The Inventory Core of the Computer has facilities for storing the condition of each bin (8,100) and can store data identifying the bin position of any of the (17,000) products. The complete warehousing is carried out by the cooperation of the Computer and the bin system and not by operation of wired logic associated with different sets of bins.

3,595,413

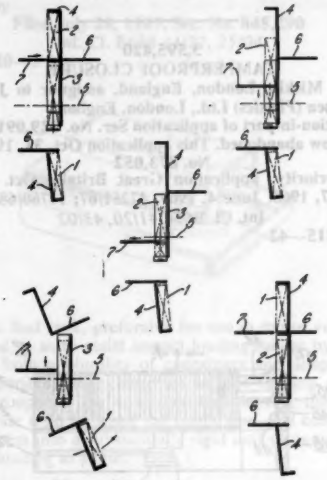
MACHINE FOR UNLOADING TRAYS OF ARTICLES

James George Edward Hillman, London, England, assignor to Molins Machine Company Limited, London, England

Filed Feb. 5, 1968, Ser. No. 702,981
Claims priority, application Great Britain, Feb. 6, 1967, 5607/67
Int. Cl. B65b *69/00*
U.S. Cl. 214—302 **36 Claims**

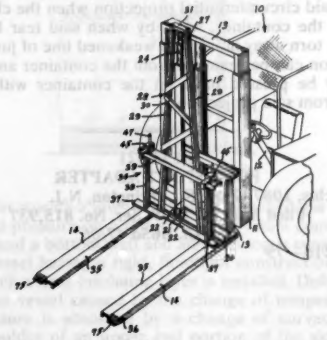
A machine for unloading trays of cigarettes having two carriers for trays which move intermittently along a circular

path in a vertical plane from a lower tray-receiving position to invert the trays over a hopper into which the cigarettes are



emptied from each tray in turn and from the bottom of which they are removed on a conveyor in a continuous stream.

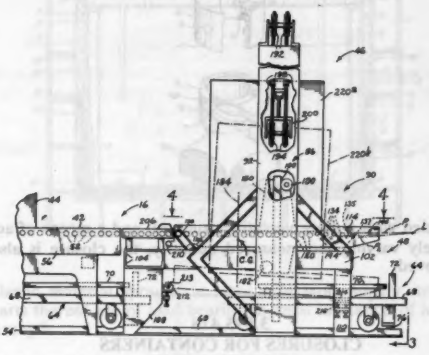
3,595,414
BOX DUMPER
George S. Brown, and Joe E. Hill, both of P.O. Box 709, Leesburg, Fla.
Filed Jan. 12, 1970, Ser. No. 2,288
Int. Cl. B65g *7/00, 65/00*
U.S. Cl. 214—313 **6 Claims**



Apparatus mountable on a forklift-type vehicle and adapted to be moved into engagement with an open top box, automatically clamped thereto so that the box can be rotated more than 90° to completely discharge the contents of the box, and then automatically released to remove the box from the apparatus.

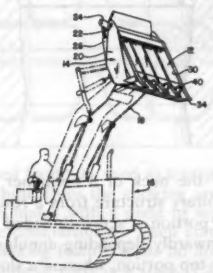
3,595,415
ELEVATOR WITH A PIVOTED SUPPORT DECK
William E. Herd, Vancouver, Wash., assignor to Columbia Machine, Inc., Vancouver, Wash.
Filed Aug. 4, 1969, Ser. No. 847,246
Int. Cl. B65g *47/00*
U.S. Cl. 214—711 **20 Claims**

Article transfer apparatus including a tiltable elevator for transferring an article from one elevation to transport mechanism at a lower elevation. The elevator is mounted for vertical movement on a pair of spaced upright posts that straddle a portion of the transport mechanism. Gravity acting on the elevator tends to hold it in an attitude with its support



deck substantially horizontal. Pivot structure causes the elevator to tilt to another attitude with its support deck inclined upon lowering of the elevator toward the lower elevation mentioned. The elevator's support deck is at least partially defined by power-driven rolls.

3,595,416
FORK ATTACHMENT
Floyd E. Perrotti, 20906 120th Ave. S.E., Kent, Wash.
Filed June 3, 1969, Ser. No. 829,888
Int. Cl. E02f *3/28*
U.S. Cl. 214—767 **5 Claims**

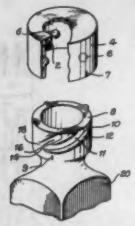


A conventional loader vehicle having forward push arms with a bucket secured at their terminal ends is provided with a replaceable fork-type rake attachment including a rake member having a plurality of tines extending downwardly below the bucket. The rake attachment is pivotally mounted on the bucket and includes power means for manipulating the rake member toward and away from the bucket. A pair of rearwardly directed log-supporting arms is secured to the rake member to hold an object when the rake member is pivoted toward the bucket. A plurality of forwardly directed teeth are provided on the rake member to serve as gripping members to prevent it from sliding up the object to be moved when the vehicle is being used to push over small trees and the like.

3,595,417
SAFETY CLOSURE
Arthur Albert Musher, deceased, 805 E. Franklin Ave., Silver Spring, Md. (by Selma V. Musher, executrix)
Filed May 13, 1969, Ser. No. 824,128
Int. Cl. A61j *1/00;* **B65d** *55/02*
U.S. Cl. 215—9 **1 Claim**

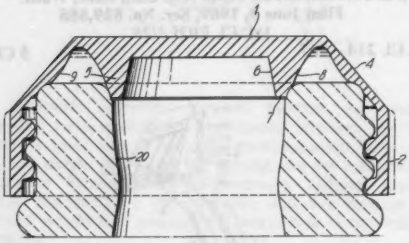
A closure and plug for a container is provided with elements interengaging with other elements on the mouth of the

container, to secure it against opening by young children. In one modification, the closure is provided with a combination safety plug and measuring device; the measuring device is



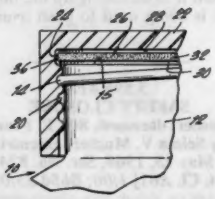
provided with a more versatile structure, and a means of accurately varying the measured quantity, the closure is also improved.

3,595,418
CLOSURES FOR CONTAINERS
Edmund Philip Adcock, Harpenden; Jeffrey Herbert Sutcliffe, Norwich, Norfolk, and Colin Charles Woodward, Maidenhead, all of, England, assignors to U.G. Closurers and Plastics Limited, Norfolk, England
Filed Apr. 25, 1969, Ser. No. 819,381
Claims priority, application Great Britain, Apr. 26, 1968, 19956/68
Int. Cl. B65d *41/04*
U.S. Cl. 215—40 **5 Claims**



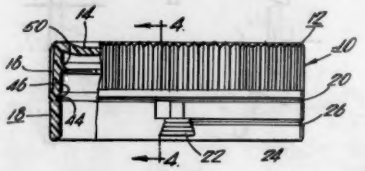
A closure for the neck of a container, which closure is moulded as a unitary structure from a resilient material and comprises a top portion, a screw-threaded annular skirt portion and a downwardly depending annulus provided on the underside of the top portion, wherein a sloping portion, having an inside surface which is at least partially convex in shape, joins the top portion to the skirt portion, and the downwardly depending annulus has a concave external face.

3,595,419
CLOSURE AND SEAL
Joseph Dukess, 931 Greacon Point, Mamaroneck, N.Y.
Filed Sept. 3, 1969, Ser. No. 855,155
Int. Cl. B65d *53/04*
U.S. Cl. 215—40 **2 Claims**



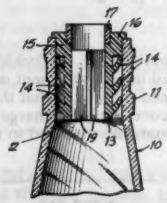
A cap and liner therefor, the cap having a groove at the top thereof for rotatably receiving the liner. The liner is formed of a sandwich and so arranged that a compressible intermediate layer can be squeezed beyond the normal periphery of the liner to engage the cap and make a better seal.

3,595,420
TAMPERPROOF CLOSURE
Brian L. Miskin, London, England, assignor to Johnsen & Jorgensen (Plastics) Ltd., London, England
Continuation-in-part of application Ser. No. 729,091, May 14, 1968, now abandoned. This application Oct. 31, 1969, Ser. No. 873,052
Claims priority, application Great Britain, Oct. 17, 1967, Mar. 27, 1968, June 4, 1969, 47251/67; 14760/68; 28286/69
Int. Cl. B65d *41/20, 43/02*
U.S. Cl. 215—42 **20 Claims**



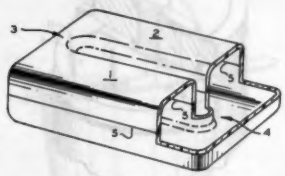
A container and closure assembly of the type in which the closure is formed of a cap portion and a tear band component and the closure cooperates with the container preventing the removal of the closure from the container until the tear band component has been detached, wherein the improvement comprises: the container having at least one circumferential projection extending from the outer surface of the container adjacent its open end, the line of junction of the tear band component and of the cap portion of the closure being weakened and substantially coinciding with the apex of said circumferential projection when the closure is in place on the container, whereby when said tear band component is torn away along said weakened line of junction, the cap portion can be removed from the container and can subsequently be pressed back on the container without interference from said projection.

3,595,421
POUR SPOUT ADAPTER
Jose Sanchis, 1087 Grove St., Irvington, N.J.
Filed Apr. 14, 1969, Ser. No. 815,937
Int. Cl. B65d *47/06*
U.S. Cl. 215—79 **1 Claim**



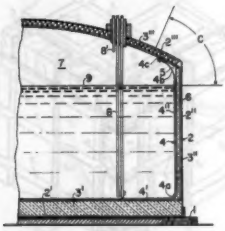
An adapter for openings of bottles and other containers has a cylindrical body provided with flexible outer ribs engaging the inner surface of a bottle opening. The interior of the cylindrical body has at least one passage for the flow of the liquid out of the bottle and at least one other passage for the return flow of air into the bottle.

3,595,422
FUEL TANK
Van D. Durrett, Jr., Bartlesville, Okla., and Warren A. Roberts, Kansas City, Mo., assignors to Phillips Petroleum Company
Filed July 28, 1969, Ser. No. 845,290
Int. Cl. B65d *11/22, 25/04*
U.S. Cl. 220—5 A 4 Claims



A plastic fuel tank, preferably for use in motor vehicles, is constructed so as to resist impact loading failure by forming said tank from a plurality of containers and adapting said tank to distribute the energy of impact loading relatively equally throughout the container by adapting the tank to communicate fluid between the containers, and constructing the containers into a substantially rigid unit so as to respond to impact loading as a unit.

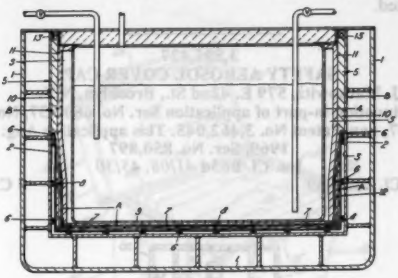
3,595,423
TANK FOR USE IN STORING LOW-TEMPERATURE LIQUEFIED GAS
Katsuro Yamamoto, Tokyo, Japan, assignor to Bridgestone Liquefied Gas Company Limited, Tokyo, Japan
Filed Oct. 10, 1969, Ser. No. 865,441
Claims priority, application Japan, Oct. 11, 1968, 73,765/68
Int. Cl. B65d *7/22*
U.S. Cl. 220—10 9 Claims



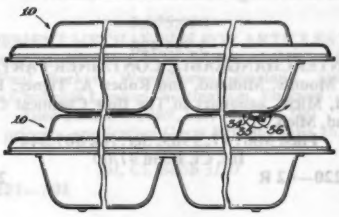
A tank for storing a low-temperature liquefied gas in which the internal pressure on a thin film inner vessel composed of a sidewall and a bottom wall and an open top is supported by an outer vessel having a rigid, fluidtight construction and inside of which a heat-insulating layer is installed. Deformation of the inner vessel caused by the change of temperature or liquid pressure is absorbed by a change of curvature of a curved shoulder of an upper end portion of the sidewall of the inner vessel and by a sliding movement of the inner vessel wall allowed by a curved or arcuate corner of the lower end portion of the sidewall of the inner vessel. The strength of the inner vessel is maintained and at the same time leakage of liquid is prevented by suspending the pipes leading into the inner vessel through a trunk mounted on the top structure of the outer vessel.

3,595,424
CONTAINERS FOR LIQUEFIED GASES
Robert Glover Jackson, Hornchurch, Essex, England, assignor to Conch International Methane Limited, Nassau, Bahamas
Filed Feb. 24, 1969, Ser. No. 801,495
Int. Cl. B65d *25/00*
U.S. Cl. 220—15 5 Claims

An insulated container such as used in marine tankers for cryogenic liquids comprising an inner metal tank surrounded and supported by thermal insulation characterized in that less lightly stressed parts of the insulation comprise rigid foamed-plastic material sprayed in situ while more highly stressed parts thereof are of load-bearing thermal insulation of higher strength.

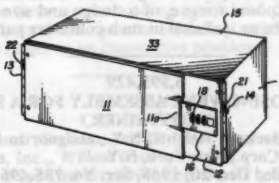


3,595,425
VENTED COMPARTMENTED FOOD TRAY
Clara V. Eicholtz, Midland, and Bertrand N. Trombley, Bloomfield Hills, both of, Mich., assignors to The Dow Chemical Company, Midland, Mich.
Filed Aug. 5, 1969, Ser. No. 847,569
Int. Cl. B65d *1/24, 21/02, 51/16*
U.S. Cl. 220—20 11 Claims



A compartmented food tray used to transport hot foods to a serving area remote from the cooking area. The tray includes a lid which mates with a plate to segregate the tray into spill-over free compartments. Each compartment has a complementary stacking feature in its lid and plate sections which permits nesting of trays in a stack. Each stacking feature in the lid includes a vent disposed to permit escape of excess steam and moisture even when the trays are nested.

3,595,426
DOUBLE-DOOR LOCK ASSEMBLY
Bob P. Conrad, 4823 Eaton, Denver, Colo.
Filed June 23, 1969, Ser. No. 835,405
Int. Cl. B65d *43/16, 51/10, 51/18*
U.S. Cl. 220—35 8 Claims



A double-door lock assembly for closing article support structures has two cooperative doors hingedly supported at

opposite ends with the free end of one door overlapping the free end of the other door in the closed position. A lock holds the lapping ends together and the biasing arrangement automatically swings the doors open when the lock is released.

3,595,427

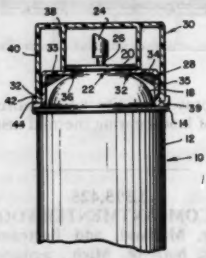
SAFETY AEROSOL COVER CAP

Isral J. Markowitz, 579 E. 42nd St., Brooklyn, N.Y.

Continuation-in-part of application Ser. No. 680,937, Nov. 6, 1967, now Patent No. 3,462,045. This application Aug. 18, 1969, Ser. No. 850,897

Int. Cl. B65d *41/08, 45/30*

U.S. Cl. 220—39 **5 Claims**



A safety aerosol cover cap of two-piece construction with threadable means securing same together so that rotation of either or both of the cap elements will not disengage the cover cap from the aerosol container, and method of assembling same as an integral unit to said container.

3,595,428

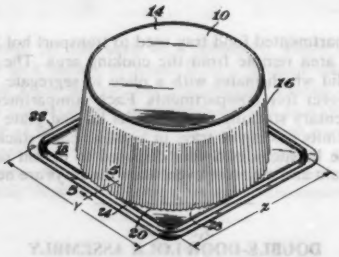
INTERCHANGEABLE CONTAINER PARTS

Lewis S. Mounts, Midland, and Ruben A. Tigner, Bay City, both of, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Mar. 17, 1969, Ser. No. 807,844

Int. Cl. B65d *41/00*

U.S. Cl. 220—42 R **20 Claims**



A plurality of container parts including tubs of circular, rectangular, oval, and like various configurations is disclosed. Such tubs are made to fit interchangeably with a single lid design by employing a mating element, as for example, a marginally disposed tongue, of a design and size common to the various tubs so included in such container parts.

3,595,429

SELF-CLOSING VENT ASSEMBLY FOR A SEALED CONTAINER

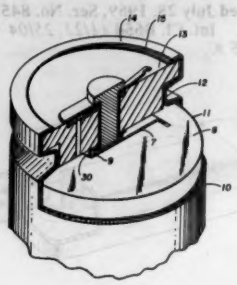
Nuri Kohen, Jackson Heights, N.Y., assignor to Yardney International Corp., New York, N.Y.

Filed Dec. 20, 1968, Ser. No. 785,496

Int. Cl. B65d *51/16*

U.S. Cl. 220—44 R **14 Claims**

A battery casing fitted at its top with a central terminal has a cantilever spring traversed by that terminal and clamped between the head thereof and an underlying O-ring to exert pressure upon a resilient plug member projecting from a recess alongside the terminal, this plug member overlying the



exit end of a vent hole passing through the casing top. Rotation of the spring from its normal position allows removal of the plug member for the introduction of fresh electrolyte into the battery via the vent hole.

3,595,430

CONTAINERS FOR LIQUEFIED GASES HAVING CORRIGATED WALL STRUCTURE

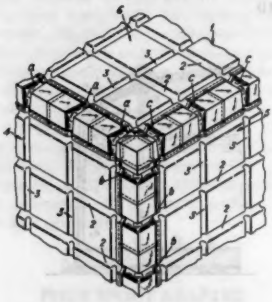
Gilbert Jean Louis Massac, Meudon, France, assignor to Conch Ocean Limited, Nassau, Bahamas

Filed Mar. 24, 1969, Ser. No. 809,742

Claims priority, application France, Mar. 26, 1968, 145,527

Int. Cl. B65d *7/42*

U.S. Cl. 220—72 **9 Claims**



Integrated or membrane tanks for cryogenic fluids such as liquid methane are often provided with parallel sets of crossed corrugations in the thin metal lining of the tank to provide excess metal for accommodating thermal expansion and contraction, which corrugations must be around a corner where two walls meet. A folded formation is provided at the corner to prevent excess thermal strains. In this disclosure the formation at the corner is made larger in cross section than some of the corrugations into which it merges, and the corrugations increase in cross section as they approach and merge into the formations, thus enabling the corner formation to be of large size and reducing the stresses at the formation. A new and effective formation configuration is also disclosed.

3,595,431

DRIPLESS PAINT CONTAINER

Francis L. Bird, Benton, Wis., assignor to Robert Hanis, Benton, Wis., a part interest

Filed Sept. 12, 1969, Ser. No. 857,493

Int. Cl. B44d *3/12*; B65d *41/18*

U.S. Cl. 220—90 **3 Claims**

The one-piece molded plastic paint container has four bosses molded integral with the inside thereof, two on each

side, provided with grooves in the top thereof to receive two snap-in wire rods in diametrically opposed parallel relation to serve as wipers for the brushes enabling drainage of excess paint therefrom without any spillage. These rods also serve as shelves on which to rest the brush or brushes when not in

use, as when working off a ladder. A snap-on lid is provided for protection of each container, and a handle has upwardly directed hook ends that engage in holes provided therefor in downwardly extending portions on the rim of the container at diametrically opposed points thereof.

3,595,432

FLOATING ROOF FOR A TANK

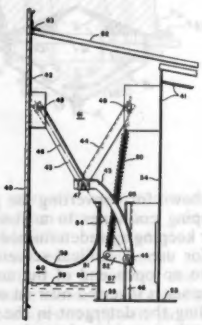
Martinus Van der Heijden, Voorburg; Teunis H. De Bruijn, Hague, and Johannes De Wit, Hague, all of, Netherlands, assignors to Shell Oil Company, New York, N.Y.

Filed May 6, 1969, Ser. No. 822,230

Claims priority, application Germany, May 9, 1968, P 17 59 513.0

Int. Cl. B65d *87/18*

U.S. Cl. 220—26 S **13 Claims**



There is disclosed a floating roof comprising a mechanism for forcing a guiding shoe against the inner surface of a tank wall, a gutter at the lower part of the peripheral wall of the floating roof, and a flexible sealing strip connected to the peripheral wall of the gutter and to the guiding shoe.

3,595,433

CARD FILES WITH A DROP FRONT

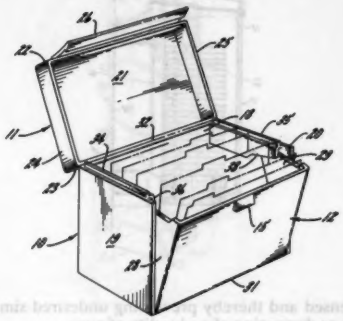
Charles E. Jones, Lincolnwood, and Joseph H. Gruenhut, Chicago, both of, Ill., assignors to G. J. Aigner Company, Chicago, Ill.

Filed Apr. 25, 1969, Ser. No. 819,312

Int. Cl. B65d *51/04, 43/16*

U.S. Cl. 220—31 S **8 Claims**

A filing case is formed as a unitary resilient, or flexible, plastic structure. A forward-swinging or dropfront panel is released when the filing case is opened, thereby making the contents readily accessible. All components of the case, including cover, panel, and hinges, are molded as an assembled



structure from one mass of resilient plastic material. The cover and front panel are each formed in an open position so as to bias these elements in that position.

ERRATUM

For Class 221—77 see:
Patent No. 3,594,872

3,595,434

ESCAPEMENT MECHANISMS FOR ARTICLES TO BE DISCHARGED FROM A MAGAZINE ALONG A CHUTE

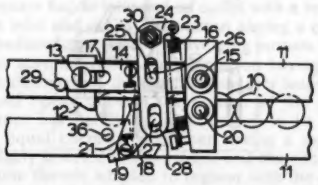
George Paul Barker, Woodthorpe, England, assignor to Charles Churchill Limited, Nottingham, England

Filed June 24, 1969, Ser. No. 836,100

Claims priority, application Great Britain, June 26, 1968, 30,355/68

Int. Cl. B65h *3/30*

U.S. Cl. 221—301 **5 Claims**



An escapement mechanism for discharging articles in succession from a chute and comprising a finger for arresting the leading article and a biased restraining member which moves into position between the leading article and the next article and accelerates discharge of the leading article upon movement of the finger to an inoperative position.

3,595,435

CUP DISPENSER

Andrew Stuard Graham, Jr., Wyncote, Pa., assignor to Fleck Industries, Inc.,, Willow Grove, Pa.

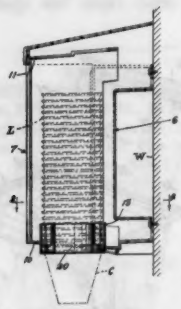
Filed Oct. 29, 1968, Ser. No. 771,486

Int. Cl. A47f *1/04*

U.S. Cl. 221—310 **1 Claim**

A dispensing mechanism providing for sequential dispensing of individual cups from a stack of serially nested

cups and including a dispensing device providing for delivery of the cup to be dispensed while restraining the next cup to



be dispensed and thereby preventing undesired simultaneous delivery or dispensing of a plurality of cups.

3,595,436

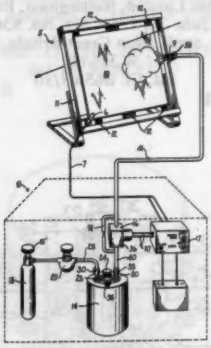
GENERATOR OF SIMULATED SMOKE SIGNALS FOR GUNNERY TARGET PRACTICE

John Alex Ingvar Ohlund, Huskvarna; Karl Ragnar Andersson,deceased, late of Huskvarna, and Ruth Ingrid Kerstin Andersson,executrix, Vaxjo, all of, Sweden, assignors to Saab Aktiebolag, Linkoping, Sweden, by said Ohlund

Continuation of application Ser. No. 548,807, May 9, 1966, now abandoned , which is a division of application Ser. No. 238,348, Nov. 19, 1962, now Patent No. 3,272,510. This application Jan. 17, 1969, Ser. No. 792,173

Int. Cl. B67d *5/54*

U.S. Cl. 222—4 **5 Claims**



A container with powder therein has its interior continuously communicated with a pressure gas source. An outlet from the container is controlled by a valve having a remotely controllable actuator that is isolated from its valve element, to prevent the actuator from being fouled by powder.

3,595,437

PARTICULATE MATERIAL FEEDING WITH POWER-SENSING MEANS

Allen C. Howard, Orange, Tex., assignor to Phillips Petroleum Company

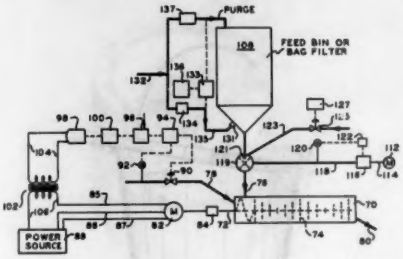
Division of Ser. No. 527,898, Feb. 16, 1966, which is a division of application Ser. No. 297,604, July 25, 1963, now Patent No. 3,249,263.

Filed Nov. 10, 1969, Ser. No. 875,092

Int. Cl. B67d *5/08*

U.S. Cl. 222—61 **3 Claims**

In apparatus for carbon black wet pelleting wherein the flow of black and aqueous liquid to a rotatable pelletizer-mixer are controlled, means are provided to inject pulses of a gas at regular intervals into the carbon black flow control



zone to prevent undesired variations in carbon black feed rate on stoppage of flow.

3,595,438

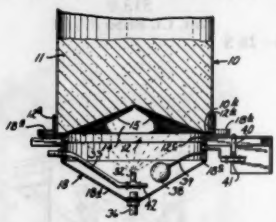
AUTOMATIC DETERGENT DISPENSER SYSTEM

Leo R. Daley, Bloomington, and Carl A. Miller, St. Paul, both of, Minn., assignors to Economics Laboratory Inc., St. Paul, Minn.

Filed Jan. 6, 1969, Ser. No. 789,150

Int. Cl. B67d *5/08*

U.S. Cl. 222—67 **14 Claims**



A system is shown for converting the powdered detergent in a large shipping container to a concentrated detergent solution and for keeping a predetermined amount of the solution available for use. A conical screen is mounted across and extends into an open end of the container. The detergent-filled container is inverted over an open receptacle with the screen holding the detergent in the container. A single water spray nozzle is mounted in the receptacle to spray water on the downwardly facing concave surface of the screen to dissolve a portion of the detergent carried thereby, which passes through the screen and collects in the receptacle.

3,595,439

COMBINATION MIXING CAPSULE AND DISPENSER

Glenn A. Newby, New Richmond, Wis., and Larry S. McTaggart, St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

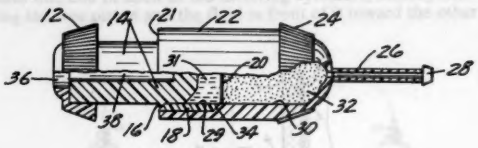
Filed Sept. 9, 1969, Ser. No. 856,262

Int. Cl. B65d *1/04, 8/00*

U.S. Cl. 222—80 **5 Claims**

A combination mixing capsule and dispenser capable of separately holding complementary materials, such as dental restorative materials until they are to be mixed and used and further serving as a dispensing device when used with suitable implements. The capsule has at least two compartments separated by an impermeable rupturable seal with each com-

partment containing one of the ingredients which are thereafter to be mixed and further has means to insure an adequate mixing chamber and means to permit complete expulsion of the mixed ingredients directly from the capsule.

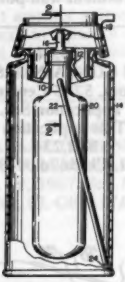


3,595,440

DUAL-DISPENSING VALVE WITH MEANS TO PREVENT THROTTLING ACTION

Samuel B. Prussin, Los Angeles, and Jimmie L. Mason, Hacienda Heights, both of, Calif., assignors to Dart Industries Inc., Los Angeles, Calif.

Filed May 2, 1969, Ser. No. 821,416
Int. Cl. B65d *35/28*
U.S. Cl. 222—95 8 Claims



A dual-dispensing aerosol valve for use in dispensing products, such as hot foam shave lather, and oxidation hair dye, or the like; said valve being adapted to operate in upright position by means of an axial reciprocal valve member slidably mounted in a housing and operable with respect to a flexible valve element contained in said housing; said housing having passages at opposite sides of said flexible valve element which are controlled by an annular seat and a poppet valve portion of said valve member opposed thereto and engageable with an opposite side of said flexible valve element from said seat; said poppet valve member having means adapted to prevent throttling action of the valve with relation to fluids dispensed at opposite sides of said flexible valve element.

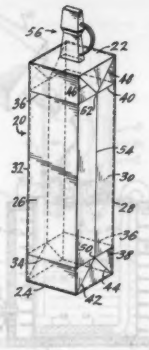
3,595,441

SINGLE-USE CONTAINER WITH DISPENSING SPOUT

Robert M. Grosjean, 4625 Merry Lane, Toledo, Ohio

Filed Sept. 3, 1968, Ser. No. 756,876
Int. Cl. B65d *35/08, 47/10;*
U.S. Cl. 222—107 11 Claims

A single-use or one-way dispensing container is made of one piece of plastic material. The container is designed to be completely collapsed to facilitate dispensing of the contents and yet even in its partially or wholly collapsed state, the bottom remains flat so as to support the container continuously in an upright position. The spout of the container preferably is made with an integral cap portion connected to a spout portion by a web and designed so that the web can be severed to enable the cap portion to serve as a removable cap on the spout.

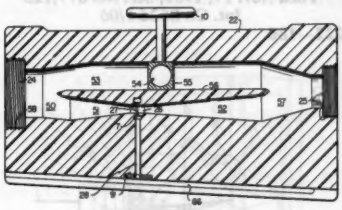


3,595,442

LIQUID DISPENSER-CONTAINER

Sanford S. Shapiro, 7009 Rivol Road, Canoga Park, Calif.

Filed Dec. 18, 1969, Ser. No. 886,241
Int. Cl. B67d *5/56*
U.S. Cl. 222—133 15 Claims



The dispenser has an inlet and an outlet with a venturi connecting the inlet and outlet, the venturi having a converging portion, a reduced portion and a diverging portion. An annular chamber surrounds the reduced portion having ports extending therethrough. A duct in the dispenser leads from the chamber and opens through the bottom of the dispenser, which bottom has parallel guides formed in its edges. A removable liquid chemical container having a top adapter plate is slidably inserted in the guides, and the container has a suction tube therein adapted to register with the duct; also a vent duct in said adapter opens to the atmosphere and communicates with the interior of the container. A main pipe connects a liquid pressure source with the dispenser inlet. A valved bypass is provided around the venturi for controlling the degree of suction within the annular chamber around the reduced portion thereof, thereby controlling the amount of liquid chemical drawn into the liquid passing to the outlet of the dispenser.

3,595,443

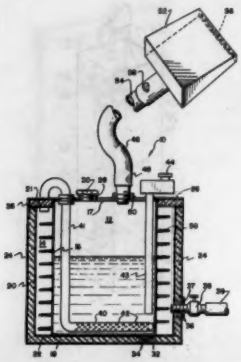
MOISTURE GENERATION

Rexford W. Jones, Columbus, Ohio, assignor to A. E. Staley Manufacturing Company, Decatur, Ill.

Filed Nov. 19, 1969, Ser. No. 878,006
Int. Cl. B67d *5/62*
U.S. Cl. 222—146 10 Claims

A moisture generator including a water chamber, an air-receiving chamber surrounding the water chamber and a sparger situated at the bottom of the water chamber and

communicating with the air-receiving chamber. A pressure regulator is provided for controlling the flow of compressed air into the water chamber. A heater is positioned in the



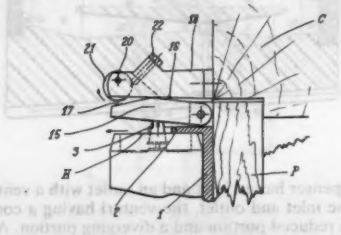
water chamber for heating the water and includes a thermostat control for regulating the temperature of the water. A nozzle is provided for applying or directing warm moist air from the water chamber onto a surface to be treated.

3,595,444

SUPPORT FOR W.C. AND THE LIKE DEODORIZING BOMBS

Francois Jean Chimer, 19 avenue de la Bornala, and Georges Richer, 83, boulevard de la Madeleine, both of Nice, Aples-Maritimes, France

Filed Nov. 17, 1969, Ser. No. 877,123
Int. Cl. B62d *5/06*
U.S. Cl. 222—180 **7 Claims**



A support for securing a deodorizing bomb on the door of W.C. or the like premises and adapted to operate the bomb only upon closing of the door. To this end a projection secured to the door over the bomb is provided along its upper surface with two longitudinal slopes of opposite directions rising towards a common raised area. An operative part pivotally carried by an arm rigid with the door frame is adapted to run over said slopes in succession. Said part rocks freely during the opening of the door without depressing the projection engaged by it whereas the closing of the door urges the projection in the opposite direction against an abutment so that it cannot rock upwardly and constrains the projection to sink and operate the pusher knob on the bomb thereby to produce a spray of the deodorant contained in the bomb.

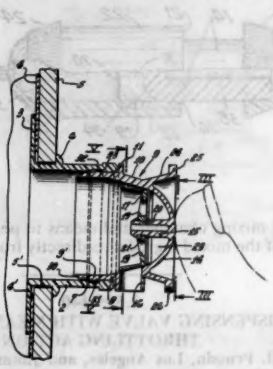
3,595,445

FLUID-DISPENSING VALVE

Wesley E. Buford, Covina, and Charles G. Buford, Azusa, both of, Calif., assignors to Rayford Industries, Inc., Covina, Calif.

Filed Jan. 27, 1969, Ser. No. 794,164
Int. Cl. B67d *3/00*; F16k *31/00*
U.S. Cl. 222—213 **2 Claims**

A self-closing, two part fluid-dispensing valve comprising an integral molded generally cup-shaped valve body member providing a valve chamber with an outlet opening. The wall of the valve body member includes a resilient portion which carries a connector means extending into the chamber for supporting a valve member having a valve skirt with surfaces sealingly engaging surfaces on the valve body member. The valve member includes a ported transverse wall which per-



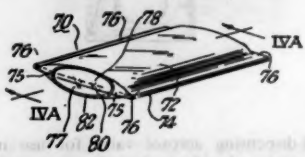
mits fluid communication between the main valve chamber and a valve chamber portion lying between the valve member and the resilient wall portion; the valve skirt being normally biased into closing relationship with respect to the outlet opening and the biasing force of the resilient wall portion being augmented by the fluid pressure head acting upon the internal surface of the resilient wall portion.

3,595,446

QUICK-OPEN CONTAINER STRUCTURE

Harold Richard Hellstrom, 5245 Center Ave., Pittsburgh, Pa.

Continuation-in-part of application Ser. No. 782,669, Dec. 10, 1968, now abandoned. This application Apr. 1, 1969, Ser. No. 812,234
Int. Cl. B67d *37/00*
U.S. Cl. 222—213 **23 Claims**



I disclose a quick-opening container structure comprising a generally cup-shaped body section having an opening therein, frangible cover means substantially coextending with said opening and joined to said body section about the periphery of said opening, means for forming a frangible line of weakening at said cover means, and a stiffening ring joined to one of said cover means and said body section and disposed about said periphery whereby the application of deformational forces longitudinally of said line of weakening causes said ring to induce an opening at said weakening means.

3,595,447

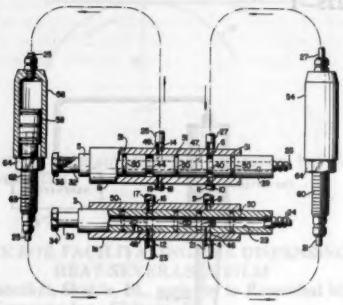
MULTIPLE OUTLET LIQUID METERING DEVICE

William J. Carroll, West Lafayette, Ind., and Frank S. Mizusawa, Garden Grove, Calif., assignors to Great Lakes Chemical Corporation, West Lafayette, Ind.

Filed Nov. 25, 1969, Ser. No. 879,792
Int. Cl. G01f *11/06*
U.S. Cl. 222—250 **7 Claims**

A device for dispensing metered amounts of fluid under pressure from a single supply line to multiple distribution outlets having a pair of flow-directing cylinders with driven

pistons connected by pipes to a pair of metering cylinders with free pistons so that when the driven pistons are at one end of their travel, fluid flows from the single supply line through the center of one of the driven pistons, through a pair of holes in the wall of the piston and the cylinder and into one end of each of the metering cylinders, thereby driving the free piston and the fluid in front of it toward the other



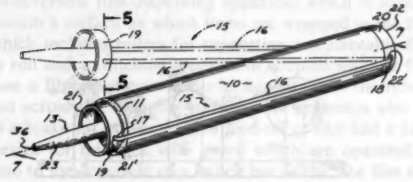
end of its travel, the exiting fluid flowing through a pair of holes in the cylinder wall of the other flow-directing cylinder, around a pair of radial recesses in the outer wall of the driven piston therein and out another pair of oppositely positioned holes in the cylinder wall to a pair of distribution outlets; this action being reversed when the driven pistons are at the other end of their travel.

3,595,448

SEALANT DISPENSERS

Ewell Lee Carlton, 11850 Edgewater Drive, Lakewood, Ohio

Filed Aug. 18, 1967, Ser. No. 661,611
Int. Cl. G01f *11/06*
U.S. Cl. 222—327 **8 Claims**



The disclosure herein relates to a sealant container adapted for use as a sealant holding and dispensing device, the same including attachment means for fluid pressure charging and spout discharge means and support means.

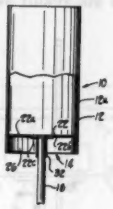
3,595,449

DISPENSING CONTAINER WITH FOLLOWER DISCHARGE ASSISTANT

Paul W. Stump, North Olmsted, Ohio; Charles D. W. Thornton, Stamford, Conn., and Roland C. Gardner, Bay Village, Ohio, assignors to Clevepak Corporation, Cleveland, Ohio

Filed Oct. 13, 1969, Ser. No. 865,915
Int. Cl. B67d *5/42*
U.S. Cl. 222—386 **8 Claims**

A plastic piston and tubular container for dispensing semisolids, such as ice cream and the like. The piston has a flat, flexible, obturating wall; a depending peripheral skirt or flange, proportioned to guide the piston axially along the tubular container, with a flared lower edge to provide a fluid-



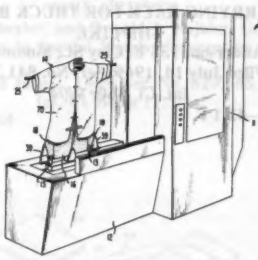
tight seal; and a central tubular hub, corrugated to provide radial flexibility, for connecting either a rodlike or tubular push device to the piston.

3,595,450

SHIRT PRESSER BAG WITH REPLACEABLE SIDES AND YOKE

George Schlemon, Atlanta, and Ernest George Shivers, Jr., Decatur, both of, Ga., assignors to Southern Mills, Inc., Atlanta, Ga.

Filed Aug. 26, 1969, Ser. No. 853,045
Int. Cl. D06c *15/00, 5/00;* A41h *5/00, 5/02*
U.S. Cl. 223—57 **7 Claims**



A shirt presser bag with inflatable side bags and yoke which are replaceable. The assembly comprises a noninflatable body bag for placement over a pressing platen, an inflatable yoke removably attached to the top edge of the body bag, and inflatable side bags juxtaposed the side edges of the body bag. The yoke defines an inflatable pocket closed at its ends and open at its center, and an elastic stay extends from end to end in the pocket and maintains the pocket in an opened condition. A substantially rigid stay is connected to each side bag and is connectable to a side edge of the body bag to hold the side bags in abutment with the edges of the body bag.

3,595,451

READILY ADJUSTABLE GUNSLING

Howard O. Branby, Minneapolis, Minn., assignor to Trail Guide Products Corporation, Wayzata, Minn.

Filed Oct. 20, 1969, Ser. No. 867,676
Int. Cl. F41b *3/00*
U.S. Cl. 224—1 A **10 Claims**

An improved readily adjustable gunsling utilizing a strip of tubular, woven, synthetic material which may be adjusted to

any gun swivel and connects at one extremity to a slide member and through a buckle with keeper to the slide

member to provide an arrangement which may be tightened and loosened and locked in any position.

3,595,452

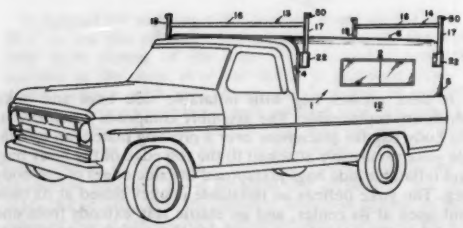
LOAD-CARRYING RACK FOR TRUCK BODIES AND THE LIKE

Bernard M. Anderson, 135 E. Clay St., Monmouth, Oreg.

Filed July 14, 1969, Ser. No. 841,386

Int. Cl. B60r *9/04*

U.S. Cl. 224—42.1 F **1 Claim**



A load carrier in the form of a rack assembly comprising horizontal frame members and means for adjustably securing the frame members to the top of truck bodies such as pickup canopies, pickup campers and similar auxiliary vehicle bodies. The adjustable securing means enables the horizontal frame members to be fixedly secured in various elevated positions relative to the body top and also elongated or retracted for accommodating loads of various widths.

3,595,453

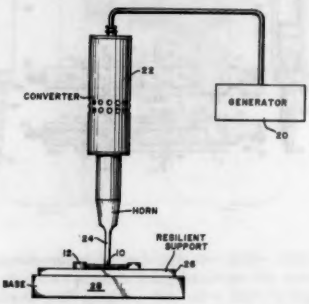
METHOD OF SEPARATING PARTS USING HIGH FREQUENCY ENERGY

Jeffrey R. Sherry, Danbury, Conn., assignor to Branson Instruments, Incorporation, Stamford, Conn.

Continuation-in-part of application Ser. No. 865,382, Oct. 10, 1969, now abandoned. This application Oct. 31, 1969, Ser. No. 872,916

Int. Cl. B26f *3/00*

U.S. Cl. 225—1 **4 Claims**



Molded parts connected to a runner are separated from the runner by applying energy in the sonic or ultrasonic frequency range to a portion of the runner or the parts.

3,595,454

METHOD AND APPARATUS FOR MANUFACTURING SPLIT FIBER WEBS FOR ORIENTED PLASTIC FILMS

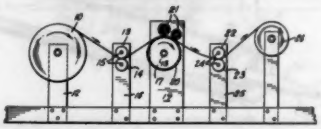
Frank Kalwaites, Somerville, N.J., assignor to Johnson & Johnson

Division of Ser. No. 710,564, Apr. 5, 1968, Pat. No. 3,547,329

Filed Feb. 4, 1970, Ser. No. 12,509

Int. Cl. B26f *1/24, 3/02*

U.S. Cl. 225—3 **3 Claims**



A method for forming split fiber webs from oriented plastic films comprising penetrating the oriented film on a group of sharp implements and, while penetrated, applying a plurality of forces in various directions to the film at least some of these forces being in the plane of the film whereby the film is fibrillated to form a web of interconnected fibers.

3,595,455

METHOD AND APPARATUS FOR SHEARING METAL PLATE MATERIAL

Clifford Pace, Chester, Pa., assignor to Gulf & Western Industrial Products Company, Grand Rapids, Mich.

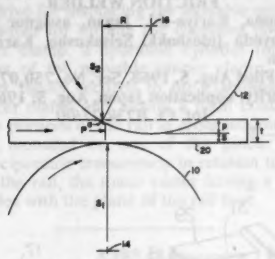
Filed Apr. 17, 1969, Ser. No. 817,024

Int. Cl. B26f *3/00*; B23d *19/04*

U.S. Cl. 225—3 **8 Claims**

A method and apparatus for shearing heavy metal plate by the use of cooperating rotary cutting discs which have diame-

ters which differ by a predetermined ratio or by the use of



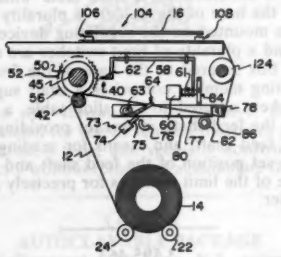
cutting discs of substantially equal diameters but driven at different velocities.

3,595,456

DEVICE FOR FACILITATING THE DISPENSING OF HEAT-SEVERABLE FILM

Ben J. Rosenthal, Skokie, Ill., assignor to Rosenthal Manufacturing Company Inc., Chicago, Ill.

Filed Aug. 4, 1969, Ser. No. 847,049
Int. Cl. B26f *3/12*
U.S. Cl. 225—11 **9 Claims**



Heat-severable film-dispensing apparatus which is located underneath a surface on which items are wrapped in the film and which includes rollers for supporting a replaceable film supply roll and a switching mechanism coupled with the film to cause a film-severing wire to be heated when the film is laid out across the wrapping surface. The apparatus also includes a brake for preventing the feed-off of film and a control device for raising a wire guard which are operated in response to the actuation of a switch bar so that the film can be severed by the heated wire.

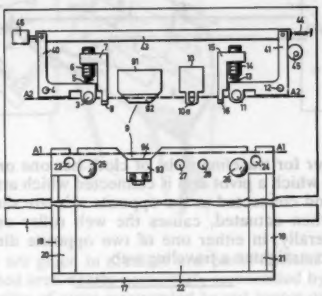
3,595,457

MAGNETIC TAPE RECORDER FOR AND CONTINUOUS TAPE FEED AND CASSETTE THEREFOR

Nils Gustaf Erik Stemme, Goteborg, Sweden, assignor to Facit AB, Atvidaberg, Sweden

Filed Sept. 11, 1968, Ser. No. 759,107
Claims priority, application Sweden, Sept. 13, 1967, 12,640/1967
Int. Cl. B65h *17/08*
U.S. Cl. 226—50 **2 Claims**

A data tape recorder, preferably a magnetic tape recorder, for alternative incremental or continuous feeding of the tape is provided with a holder or fitting for an exchangeable cassette containing the tape. The recorder comprises two complex units. A first one of the two units includes the holder for the cassette, two powered drive rollers for cooperation with the tape, and one of the two operative parts of an electromagnetically controlled tape brake. The second unit includes the second operative part of the brake and a pressure roller for cooperation with every drive roller. The two units can be displaced relative to each other between a position in which a cassette can be inserted into or removed from the holder, and an operative position in which the operative pressure roller constantly presses the tape against the associated drive roller. The two drive rollers are continuously rotating



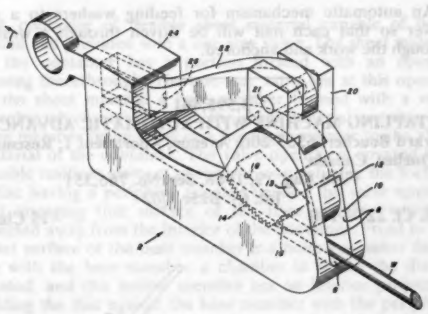
unidirectionally irrespective of whether the tape is moved incrementally or continuously. Said parts of the tape brake are positioned on either side of the tape. The brake is controllable between a tape-blocking position and a tape feed position. Incremental or continuous feed of the tape is obtained by releasing the brake intermittently or for relatively long periods, respectively.

3,595,458

WIRE-GRIPPER

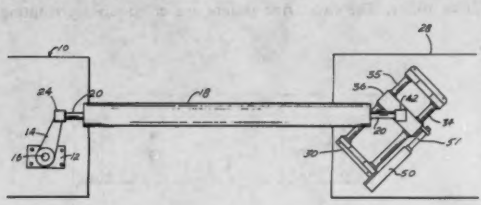
Stefan Prigl, Schuyler, and Donald J. Nojaim, Utica, both of, N.Y., assignors to Special Metals Corporation,, New Hartford, N.Y.

Filed June 2, 1969, Ser. No. 829,586
Int. Cl. B65h *17/36*
U.S. Cl. 226—164 **5 Claims**



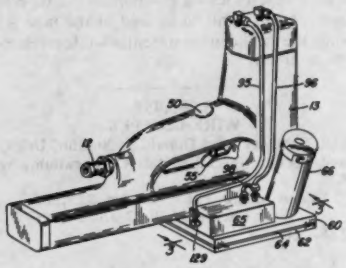
Apparatus for gripping an article such as a rod, wire or the like for drawing the article including a housing with a longitudinal slot extended upwardly by sidewalls defining a cavity in which a gripping member is pivotally mounted. The gripping member has an arm extending beyond the housing forming a part of a linkage with a second arm which extends through a slot in the rear of the housing adapted to slidably receive the second arm. The drawing force is applied to the second arm, which rotates the gripping member into contact with the article to be drawn.

3,595,459
GUIDER FOR STRAIGHTENING TRAVELING WEBS
Paul V. Colombo, P.O. Box 1128, Taunton, Mass.
Filed Nov. 4, 1969, Ser. No. 873,818
Int. Cl. B65h 23/26
U.S. Cl. 226—199 8 Claims



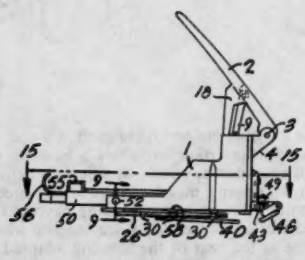
A guider for traveling webs of cloth has one or more web rollers to which a pivot arm is connected which arm moves in an arc, and connected at the opposite side are sliding means which, when actuated, causes the web roller or rollers to move laterally, in either one of two opposite directions, as needed to straighten a traveling web.

3,595,460
WASHER FEEDER FOR NAIL DRIVER
Roy S. Pitkin, 2735 N.E. 18th Ave., Portland, Oreg.
Filed Oct. 16, 1968, Ser. No. 768,046
Int. Cl. B27f 7/02
U.S. Cl. 227—48 11 Claims



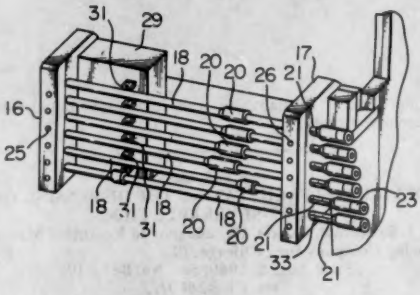
An automatic mechanism for feeding washers to a nail driver so that each nail will be driven through a washer, through the work and anchored.

3,595,461
STAPLING MACHINE WITH AUTOMATIC ADVANCE
Gerard Boucher, 6555 20th Avenue, Apartment 1, Rosemont, Quebec, Canada
Filed Aug. 19, 1968, Ser. No. 766,351
Int. Cl. B25c 5/02
U.S. Cl. 227—108 15 Claims



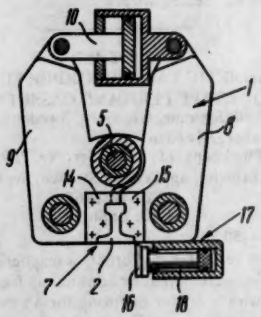
A stapling machine with automatic advance designed especially for making carpet joints.

3,595,462
DEVICE FOR REGULATING THE OPERATIONS OF THE FRICTION WELDER
Seizo Hirayama, Kariya-shi, Japan, assignor to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya-shi, Aichi-Ken, Japan
Filed Aug. 5, 1968, Ser. No. 750,073
Claims priority, application Japan, Aug. 5, 1967, 50391/67
Int. Cl. B23k 27/00
U.S. Cl. 228—2 4 Claims



A regulating device for regulating the operations of a friction welder is mounted on a slide table which is slidably mounted on the base of the welder. A plurality of regulating members are mounted on the regulating device in a parallel condition, and a plurality of limit switches are disposed in a limit switch box secured to the base of the friction welder. Each regulating member comprises a shaft supported by a pair of brackets secured to the slide table, a dog slidably mounted on the feed shaft, means for providing axial movement of the feed shaft, and means for reading the relation between the set position of the feed shaft and the dog to a feeler of one of the limit switches for precisely actuating the friction welder.

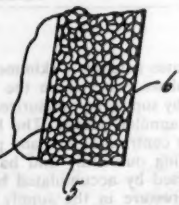
3,595,463
TRANSPORTABLE MACHINE FOR BUTT-WELDING OF RAILS
Sergei Ivanovich Fadeev; Viktor Epifanovich Gora, and Arkady Khasin-Dubrovsky, all of Alexeevich of Moscow, U.S.S.R., assignors to Spetsialnoe Proektno-Tekhnologichesko-Konstruktorskoe Bjuro Glavnogo Upravlenia Puti I Sooruzkeny MPS SSSR, Moscow, U.S.S.R.
Filed Aug. 12, 1968, Ser. No. 751,811
Int. Cl. B23k 19/00
U.S. Cl. 228—44 8 Claims



A transportable machine for the but-welding of rails under field conditions. The machine is provided with a stationary pincer clamp for fixing a first rail to be welded, a movable

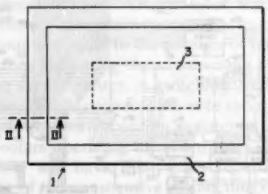
pincer clamp for fixing another rail to be welded to the first rail, a common axle on which the pincer clamps are mounted, a drive for displacing the movable pincer clamp, a hydraulic cylinder for turning the clamping jaws of the stationary pincer clamp, a hydraulic cylinder for turning the clamping jaws of the movable pincer clamp, at least two profile cutters rigidly secured to the clamping jaws of the movable pincer clamp and having a form contoured to the head and side portions of the rail in cross section, at least one lower cutter mounted on one of the pincer clamps and adapted to reciprocate transversely in relation to the longitudinal axis of the rail, the lower cutter having a cutting edge which coincides with the plane of the rail foot.

3,595,464
INSULATED VENDING CUP
James M. Harrison, Fort Worth, Tex., assignor to Crown Molding Co., Dallas, Tex.
Filed May 28, 1969, Ser. No. 864,235
Int. Cl. B65d *1/00, 25/14*
U.S. Cl. 229—1.5 B **3 Claims**



A one-time use, throwaway, inexpensive, thin wall cup primarily intended for use in vending machines preferably of the coin-controlled type, and specially constructed so that static electricity will not remain or accumulate thereon.

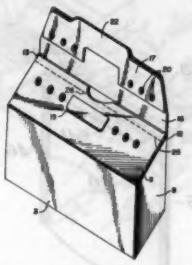
3,595,465
AUTOCLAVABLE PACKAGE
Vincent L. Vaillancourt, Livingston, N.J., assignor to C. R. Bard, Inc., Murray Hill, N.J.
Filed Sept. 19, 1969, Ser. No. 859,592
Int. Cl. B65d *33/16;* **A61b** *19/02*
U.S. Cl. 229—3.5 **6 Claims**



A sealed package for surgical devices such as catheters, intravenous devices, instruments and the like, formed by heat sealing marginally an upper laminated web of plastic materials selected for their autoclavability and a lower web of paper having controlled porosity to permit steam and/or gas sterilization.

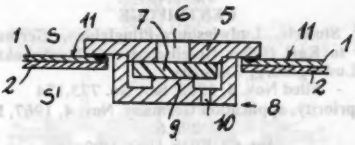
3,595,466
RECLOSEABLE CARTON
Charles W. Rosenburg, Jr., North Tonawanda, N.Y., assignor to F. N. Burt Company, Inc.,, Buffalo, N.Y.
Filed July 17, 1969, Ser. No. 842,610
Int. Cl. B65d *5/66*
U.S. Cl. 229—44 R **6 Claims**

A recloseable carton produced from a paperboard blank is disclosed wherein the cover means includes inner and outer panels which are overlapped and initially releasably glued together. After being opened the carton may be reclosed by overlapping the two panels in reverse order, the then outer panel being retained in closed position by end flaps on the panel inserted between the ends of the then inner panel and the end panels of the carton. When initially glued together



the panels are glued in areas of one panel defined by a centrally located area nearly completely surrounded by a die cut and a plurality of areas surrounded by cut scores on opposite sides of the die-cut area, whereby upon opening, the die-cut area is pulled out of the one panel followed by delamination of the cut score areas of that panel.

3,595,467
FLEXIBLE SEALED CONTAINER PROVIDED WITH A ONE-WAY SAFETY VALVE
Luigi Goglio, Via Solari 10, Milan, Italy
Filed Jan. 15, 1969, Ser. No. 791,304
Claims priority, application Italy, Jan. 23, 1968, 11893 A/68
Int. Cl. B65d *31/14*
U.S. Cl. 229—62.5 **9 Claims**

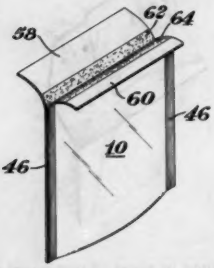


A container of flexible sheet material capable of being sealed and provided with a one-way valve. The sheet material of the container has a portion formed with an opening passing therethrough. The one-way valve has at this opening of the sheet material a base member formed with a valve opening which registers with the sheet material opening, this base member being fixed in a fluidtight manner to the sheet material of the container. The valve opening is covered by a flexible resilient element of the one-way valve, in the form of a disc having a periphery situated beyond the valve opening and engaging that surface of the base member which is directed away from the interior of the container. Fixed to this latter surface of the base member is a hollow member defining with the base member a chamber in which the disc is located, and this hollow member has an interior projection holding the disc against the base member with the periphery of the disc extending beyond the projection of the hollow member. This hollow member is itself formed with a discharge opening communicating with the interior space of the chamber at a part thereof which is situated beside the projection in communication with the periphery of the disc. Thus, as long as the atmospheric pressure is greater than the interior pressure of the container the disc will be held against the base member closing the valve opening. However, when the interior pressure in the container exceeds atmospheric pressure the disc will yield to permit a fluid such as a gas at an undesirably high pressure to escape out of the interior of the container into the chamber of the hollow member and out through the discharge opening thereof to the outer atmosphere.

3,595,468
OPENING DEVICE

John P Repko, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed June 6, 1969, Ser. No. 831,019
Int. Cl. B65d *5/70, 33/22*
U.S. Cl. 229—66 2 Claims

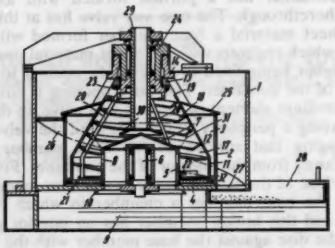


An improved opening device is disclosed comprising a strip of material, preferably fibrous material such as paper, secured flatwise between opposite face portions of an item such as a film pouch. The face portions terminate in edges, i.e., the top edges of the pouch, which can be grasped as tabs to open the item by separating the face portions at the region of the strip. Separation can be at the interface of the strip and either face portion, or the strip can delaminate into layers associated with the face portions, respectively. Such, an opening device, even if formed of paper, is useable in certain "boil-in-the-bag"-type packages.

3,595,469
CENTRIFUGE

Theodor Stoferle, Ludwigsburg-Pflugfelden, Germany, assignor to Karl Huller Gesellschaft mit beschrankter Haftung, Ludwigsburg, Germany

Filed Nov. 4, 1968, Ser. No. 773,174
Claims priority, application Germany, Nov. 4, 1967, P 16 32 296.6
Int. Cl. B04b *1/00, 3/00*
U.S. Cl. 233—7 21 Claims

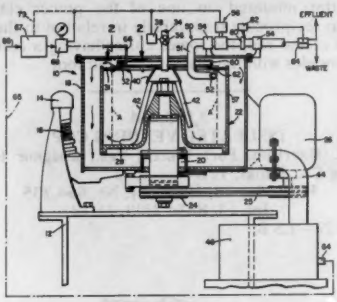


A centrifuge, especially for separating chips from cooling fluids and lubricants, which includes rotatable substantially vertical drum means having a bottom and also having inlet opening means for admitting the mixture containing the media to be separated from each other in said drum and also having first and second outlet means for respectively discharging the lighter and heavier separated medium, said first outlet means for the lighter separated medium being located above and in spaced relationship to said bottom of said drum.

3,595,470
CONTROL APPARATUS FOR CENTRIFUGE

Leonard Shapiro, Upper Darby, Pa., assignor to Pennwalt Corporation

Filed Oct. 28, 1968, Ser. No. 771,156
Int. Cl. B04b *11/00*
U.S. Cl. 233—19 15 Claims

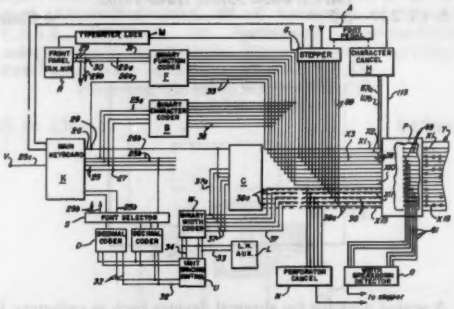


Control apparatus actuates a skimmer for removing accumulated heavy-phase material on the peripheral wall of a centrifuge bowl by supplying pressurized control liquid to an inwardly facing annular pocket. The latter is mounted for rotation with the centrifuge bowl and provided with a drain passageway leading outwardly and having an outer outlet which is obstructed by accumulated heavy phase material, whereby back pressure in the supply line for the control liquid initiates operation of the control.

3,595,471
CONTROL CIRCUITS FOR THE TAPE PERFORATORS OF A PHOTOCOMPOSING APPARATUS

Morton Jack Holiday, 9180 Ogden St., Thornton, Colo.

Filed Sept. 20, 1968, Ser. No. 761,218
Int. Cl. B41b *25/10*
U.S. Cl. 234—4 8 Claims



The normal operation of the perforator of a multichannel tape perforator apparatus which code punches a tape from information supplied by a main typewriter keyboard and auxiliary control keyboard is modified by supplemental circuits. A first supplemental circuit includes a two-branch lead extending from a potential source, with one branch to perforator actuators of channels which codes characters and the other branch to perforator actuators of channels which codes spacing information. When both groups of perforators function simultaneously, current flow through the branch lead is balanced. Should the spacing information perforators malfunction, an unbalanced current flow through the branch lead actuates mechanisms to stop the apparatus. A second supplemental circuit includes a holding lead which locks in

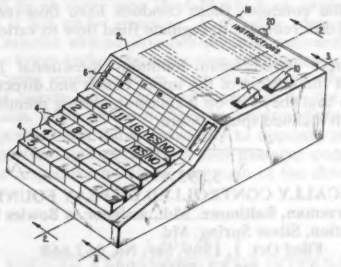
switches of pulsing leads on channels perforating a given code. Repeated pulses at those channels effect a repetition of the perforation of the given code each time the pulse occurs, and the number of pulses and repeat perforations may be regulated manually with a counter means. A third supplemental circuit is adapted to ground selected channels of the perforator leads to prevent their operation, but to permit continued operation of other channels therein. A fourth supplemental circuit bypasses the power source supplying the perforator leads, and this bypass extends to the perforator leads which code space information to energize such leads without operation of the perforator solenoids therein, to permit operation of the apparatus without operation of the perforators. Finally, an improved connector for interconnecting corresponding branches of multiple networks includes a plurality of plug and socket members, with a network branch at each member.

3,595,472

MACHINE FOR COUNTING AND RECORDING VOTES

Stanley N. Darling, and Reyi Darling, both of 1248 Craigflower Road, Victoria, B.C., Canada

Filed Sept. 26, 1968, Ser. No. 762,762
Int. Cl. G07c *13/00*
U.S. Cl. 235—50 A **7 Claims**



A voting apparatus for locally and remotely recording the results of voting. The vote is recorded locally by a machine having a plurality of selector tabs for operation by the voter, and a counting and recording device connected to each tab by a mechanical linkage. All the local machines are connected to a remote tabulation center. The center comprises a number of counters equal to the number of tabs with the tabs of each machine indicating the same voting proposition connected to the same counter. A switching mechanism in each counter consecutively connects the vote recorded by the tabs with the counting and recording register in the counter. A plurality of voters operating to record their vote at the same instant of time will have their votes recorded as separate votes because of the consecutive connection rather than having them recorded as a single vote.

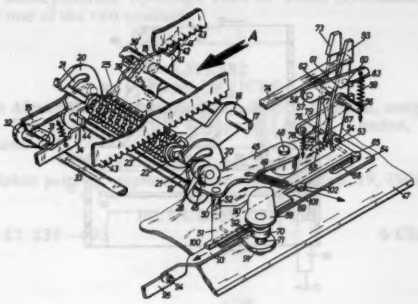
3,595,473

CALCULATING MACHINE WITH A DEVICE FOR ROUNDING OFF AN AMOUNT AND FOR CANCELLING DECIMAL POSITIONS

Otto Haberkorn, Gerstetten, Germany, assignor to Walther-Bueromaschinen GmbH, Gerstetten Wuertt., Germany

Filed Feb. 19, 1970, Ser. No. 12,203
Int. Cl. G06c *23/00*
U.S. Cl. 235—63 DE **11 Claims**

A calculating machine having a 10-digit keyboard is provided with a register for temporarily storing values and is selectively engageable with the actuating mechanism to receive values therefrom. A function lever is operatively connected to the register through a linkage which laterally displaces the register in response to positioning of the function lever to cancel decimal positions. The frame of the register is



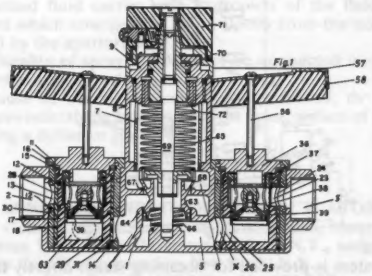
also provided with a lever which is engageable with the actuating mechanism for rounding off the decimal value before the cancelled positions.

3,595,474

HOT AND COLD WATER MIXING VALVES

Jurgen Humpert, Hemer-Fronsberg, Germany, assignor to Friedrich Grohe Armaturenfabrik, Hemer, Germany

Filed Sept. 26, 1969, Ser. No. 861,278
Claims priority, application Germany, Sept. 27, 1968, P 17 75 814.4
Int. Cl. G05d *23/00*
U.S. Cl. 236—12 **13 Claims**



A mixing valve for controlling the flow of hot and cold fluids with temperature controlled through thermostatic means. The fluid lines connecting to the valve contain within the valve connections, sleeve members having passages displaced from each other. These passages are fully closeable and fully openable through 90° of rotation of the sleeve member. The sleeve member is, furthermore, provided with a check valve and filter, and a hollow insert member on the check valve is operatively coupled to the sleeve member. When the hollow insert member is rotated, the sleeve member is rotated therewith, so that the hollow insert member is fully removable and insertable from and into the sleeve member when the latter is in fully closed position.

3,595,475

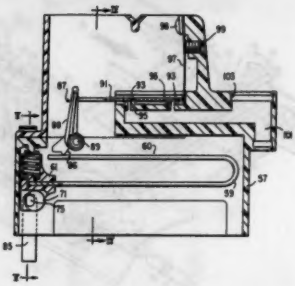
BLEED-TYPE THERMOSTAT

Daniel H. Morton, North Syracuse, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Aug. 1, 1969, Ser. No. 846,662
Int. Cl. G05d *23/02*
U.S. Cl. 236—93 **4 Claims**

A ceiling air terminal serving as part of an air-conditioning system for a building adapted to discharge conditioned air into an area to be treated. The terminal is provided with a

bleed-type thermostat employing a perforated bimetallic element movable in response to temperature variations in the air passing through the perforations from the area served by



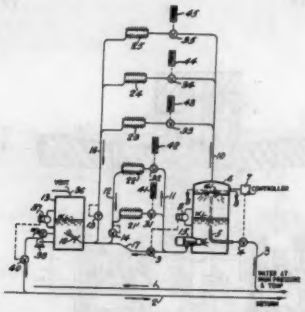
the air terminal to regulate the quantity of air bled from the thermostat and thereby control the quantity of conditioned air discharged from the terminal.

3,595,476

HTW HEATING SYSTEMS

Milton Eaton, 363 Ninth Street, Shawinigan, Quebec, Canada

Filed July 18, 1969, Ser. No. 843,134
Claims priority, application Canada, July 19, 1968, 025,670
Int. Cl. F24d *3/04*
U.S. Cl. 237—8 7 Claims



A system is provided for obtaining steam directly from an HTW heating system for heating the upper levels of high buildings. The system comprises a source of high-temperature water, means for separating said water into a steam portion and a hot water portion, means for heating spaces of the upper levels of the said building with said steam portion and means for heating spaces of the lower levels with said hot water portion, means for controlling the temperature of said heated spaces and means for returning the said water to said system.

3,595,477

FOG DISPERSING METHOD AND COMPOSITIONS

Goesta Wollin, Snedens Landing, Palisades, N.Y., and David B. Ericson, 625 S. Broadway, Nyack, both of, N.Y.

Filed Apr. 21, 1969, Ser. No. 818,069
Int. Cl. A01g *15/00*; E01h *13/00*
U.S. Cl. 239—2 11 Claims

This disclosure is directed to novel compositions and to their use to disperse fogs or to produce rain. These compositions are fluid mixtures formed without, or with minor amounts of, water.

Examples of compositions of this invention include:

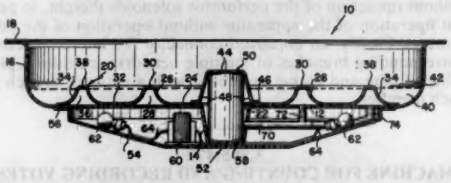
1) urea, ammonium nitrate and water;
2) acetamide, ammonium nitrate and water;
3) acetamide, urea and water; and
4) acetamide, urea and ammonium nitrate.

3,595,478

SPLASH-INHIBITING FOUNTAIN UNIT

Don W. Power, R.R.1, Rushville, Ind.

Continuation-in-part of application Ser. No. 681,981, Nov. 13, 1967. This application Sept. 8, 1969, Ser. No. 857,299
Int. Cl. F21p *7/00*
U.S. Cl. 239—20 13 Claims



A fountain has a translucent molded plastic basin with a unitary conduit piece integral therewith to provide upstanding fluid conduits for the bottom of the basin. The conduits have directional, fluid passageways therethrough which provide a nozzle for the fountain jets of fluid.

Fluid drains between the conduits to a central pump mounted in a central depressed receiving chamber integral with the basin. A fluid supply system carries fluid from the pump to the conduits; these conduits have flow-restricting washers of different size to regulate fluid flow to various conduits.

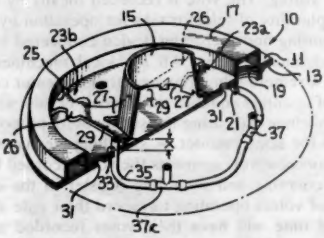
In multiple tiered basin fountains directional jets are disposed at the bottom of the upper basins and direct the jet streams so that they fall on a splash-inhibiting member such as a smooth inclined splash board.

3,595,479

FLUIDICALLY CONTROLLED DISPLAY FOUNTAIN

Peter A. Freeman, Baltimore, Md., assignor to Bowles Fluidics Corporation, Silver Spring, Md.

Filed Oct. 1, 1969, Ser. No. 862,668
Int. Cl. B05b *17/08*
U.S. Cl. 239—23 12 Claims



A method and apparatus are disclosed for providing a sequentially varying flow pattern for a display fountain. A generally cylindrical chamber, having an upwardly directed open end, receives fluid from a plurality of fluidic diverter elements which are circumferentially spaced about the chamber periphery. One outlet from each diverter directs liquid radially into the chamber and the other diverter outlet directs liquid tangentially into the chamber. Tangential inflow to the chamber causes the liquid to issue from the open chamber end as an integral sheet which follows a generally parabolic trajectory in flowing toward a pool below the apparatus. The sheet continues to spin while falling, forming a bubble of size determined by the number of diverters which feed fluid tangentially into the chamber. By sequentially switching the diverters, the bubble can be made to grow and/or diminish in rhythmic sequential steps.

3,595,480

OXYGEN-FUEL-BLOWING MULTIHOLE NOZZLE

Kazuo Kunioka, and Takeshi Tada, both of Yokohama-shi, Kanagawa-ken, Japan, assignors to Nippon Kokan Kabushiki Kaisha

Filed Nov. 29, 1968, Ser. No. 780,001
Int. Cl. B05b 15/00
U.S. Cl. 239—132.3 3 Claims

A multinozzle lance in which a central fuel pipe is surrounded by an outer pipe through which an oxygen containing gas is fed under pressure. A plurality of angularly displaced nozzles extend downwardly and outwardly inclined from the lower end of the outer pipe and the lower end of the central pipe communicates with the nozzle through fuel passages having axes extending transverse to the respective nozzle axis. Each of the nozzles has intermediate its ends a throat portion and flares outwardly to opposite sides of the throat portion, and each of the fuel passages communicates with the respective nozzle downstream of the throat portion thereof.

3,595,481

FOGGER ATTACHMENT FOR INTERNAL COMBUSTION ENGINES

Paul A. Emblom, Eden Prairie, Minn., assignor to Judd Ringer Corporation, Eden Prairie, Minn.

Filed June 17, 1969, Ser. No. 834,096
Int. Cl. B05b 1/24
U.S. Cl. 239—129 6 Claims

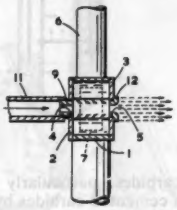
A fogging attachment for an internal combustion engine in which a container of vaporizable insecticide solution may be coupled through two conduits to the muffler of the engine by a fitting which has a cylindrical stem adapted to extend through a cylindrical opening in the wall of the muffler and to be secured to the muffler by a deformable sleeve which is deformed to engage the inner wall of the sleeve, said stem having a cylindrical opening divided by a divider plate into two semicylindrical openings, each of which communicates with one of the two conduits.

3,595,482

SPRAY DEVICES

John Alexander Jefferson-Loveday, Rugby, England, assignor to The English Electric Company Limited, London, England

Filed Feb. 18, 1969, Ser. No. 800,174
Claims priority, application Great Britain, Feb. 19, 1968, 7989/68
Int. Cl. B05b 7/10
U.S. Cl. 239—403 6 Claims



A spray nozzle is in the form of a chamber 1 having end walls 2 and 3 each with an aperture 4, 5 respectively. The fluid to be sprayed is drawn from a feed tube 6 and is circulated within the chamber 1 by a deflector plate 8. A pressurized fluid, e.g. compressed air, is fed via a pipe 11 through the aperture 4 and through the center of the chamber 1. This pressurized fluid carries with it droplets of the fluid to be sprayed which emerge at a high velocity from the nozzle 12 carried by the aperture 5.

A plurality of spray nozzles may be connected in cascade to provide a spray system.

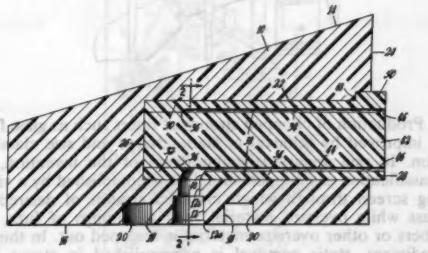
Because of the high-velocity spray produced, the device may conveniently be used to cool the inner surface of a housing using a deflector plate 14.

3,595,483

ANNULAR CONDUIT AEROSOL ACTUATOR

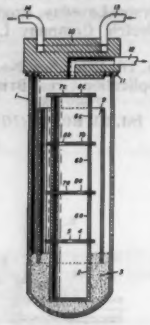
Ernest Gehres, Mount Kisco; Gilbert S. Jordan, Monroe, and Norman Usen, West Haverstraw, all of, N.Y., assignors to Union Carbide Corporation, New York, N.Y.

Filed Dec. 11, 1968, Ser. No. 783,028
Int. Cl. B05b 1/34
U.S. Cl. 239—469 8 Claims



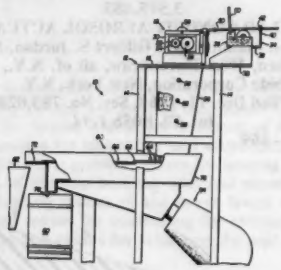
An aerosol actuator assembly especially adapted for utilization with dry powder aerosols comprising an annular dispensing conduit formed by insert means placed within an opening in the actuator button. Aerosol formulation flow is directed in such a manner that it is dispensed through the annular conduit in a spiral path.

3,595,484
RECLAMATION OF REFRACTORY CARBIDES FROM CARBIDE MATERIALS
Paul G. Barnard; Aaron G. Starliper, and Heine Kenworthy, all of Rolla, Mo.
Filed Feb. 28, 1969, Ser. No. 803,323
Int. Cl. B02c *19/12*
U.S. Cl. 241—3 6 Claims



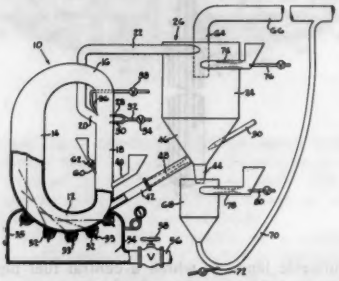
Refractory carbides, particularly tungsten carbide, are reclaimed from cemented carbides by treating the cemented carbide with molten zinc and subsequently distilling the zinc from the mass. The zinc forms an alloy with the cementing agent, usually cobalt, thereby dissolving the carbide-cementing agent bond and permitting recovery of a mixture of the carbide and the cementing agent in a form that can be reused in preparation of cemented carbides.

3,595,485
METHOD OF AND APPARATUS FOR PRODUCING CHOPPED FIBROUS STRANDS
Sidney G. Dunbar, and Leo A. Oswald, both of Huntingdon, Pa., assignors to Owens-Corning Fiberglas Corporation
Filed Jan. 15, 1969, Ser. No. 791,287
Int. Cl. B02c *13/13, 18/06*
U.S. Cl. 241—4 15 Claims



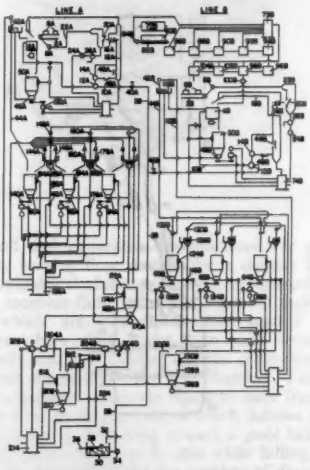
Production of chopped strands of fibers such as glass fibers is improved by removal of static charge and size classification. In one apparatus embodiment of the invention, size classification of chopped strands is accomplished by a vibrating screen through which chopped strands of desired size pass while oversize material such as clumps of fuzz, long fibers or other oversize material is screened out. In this embodiment, static removal is accomplished in stages by a charge dissipating structure, a liquid applicator and an ionized airstream. Method subject matter of the invention includes a step of screening chopped strands supplied from a cutter to pass chopped strands of desired sizes while screening out oversize material such as clumps of fuzz. Static is removed by contacting continuous fiber strands which are fed to a cutter with electrically conductive structure at a reference potential, and also by applying liquid to the continuous strands. After chopping of the strands, they may be further exposed to ionized flowing air to assist in reducing static charge.

3,595,486
TREATMENT OF GRANULAR SOLIDS BY FLUID ENERGY MILLS
Nicholas N. Stephanoff, Haverford, Pa., assignor to Fluid Energy Processing & Equipment Company, Hatfield, Pa.
Division of Ser. No. 607,974, Jan. 9, 1967, Pat. No. 3,491,953
Filed Nov. 24, 1969, Ser. No. 879,322
Int. Cl. B02c *19/06*
U.S. Cl. 241—5 5 Claims



A method of treating solid particles by propelling jets of elastic fluid, such as gas or vapor, in selected lateral directions against a circulating vortex of particles entrained in similar elastic fluid to selectively propel a larger proportion of the particles toward or away from an outlet positioned adjacent the inner peripheral portion of the vortex.

3,595,487
METHOD OF AUTOMATING THE OPERATION OF PAPER STOCK PREPARATION PROCESSING APPARATUS
Howard Bidwell, 59 Aldrich St., Granby, Mass.
Continuation-in-part of application Ser. No. 315,589, Oct. 11, 1963, now Patent No. 3,387,794, dated June 11, 1968. This application Apr. 8, 1968, Ser. No. 719,507
Int. Cl. B02c *21/00, 25/00*
U.S. Cl. 241—21 2 Claims



Methods for automatically controlling the processing of fibrous materials from bulk unrefined form to accepted

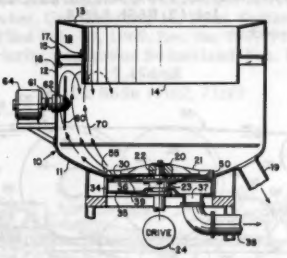
refined furnish stuff condition, and meter proportioning the furnish stuff from refining density with a liquid vehicle to obtain a machine forming density at flow volume rates, in accordance with the machine forming demand rate for the papermaking or allied purpose.

3,595,488

METHOD OF WASTE TREATMENT

Earl T. Blakley, Cincinnati, Ohio; David E. Chupka, Middletown, Ohio; Donald L. Harbron, Jr., Wisconsin Rapids, Wis.; Paul G. Marsh, Hamilton, Ohio, and Peter Seifert, Middletown, Ohio, assignors to The Black Clawson Company, Hamilton, Ohio

Filed Sept. 29, 1969, Ser. No. 861,778
Int. Cl. B02c *13/16, 18/12*
U.S. Cl. 241—21 **5 Claims**



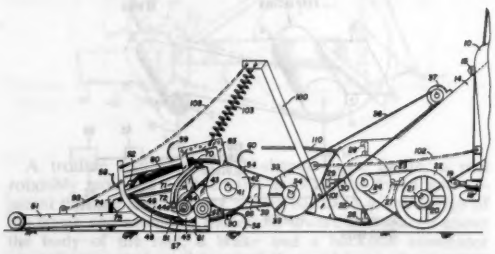
A method of waste treatment in which materials of widely different physical characteristics such as glass, metal, and fibrous and plastic waste are received in a vessel having a rotor rotatably mounted therein, the rotor being adapted to fracture brittle material, compact malleable material, and otherwise pulverize the frangible waste to a particulate form small enough to be extracted through a perforated plate. The rotor also circulates the material in a slurry form within the vessel in a vortical pattern so that the waste is repeatedly treated until it is ejected from the vessel. A series of spaced attrition bars are mounted outwardly of the rotor to provide an annularly shaped, discontinuous attrition surface, and hammers or flails are pivotally mounted on the rotor to reduce into smaller pieces materials which are flung upon or between the attrition bars by the rotor. Where the waste material contains a high proportion of rags, tubing and other stringy material, a rotating chopper blade is provided to chop this portion of the waste into smaller pieces which are more readily handled by the rotor and flails. Waste materials which are not readily reduced to a pulverized state are segregated from those which are and removed separately.

3,595,489

LITTER COLLECTING-PULVERIZING METHOD

Alvin R. Juno, Phoenix, Ariz., assignor to First National Bank, Quanah, Tex.

Division of Ser. No. 537,040, Mar. 24, 1966, Pat. No. 3,449,780
Filed Aug. 13, 1968, Ser. No. 752,248
Int. Cl. B02c *13/04, 13/286*
U.S. Cl. 241—25 **3 Claims**



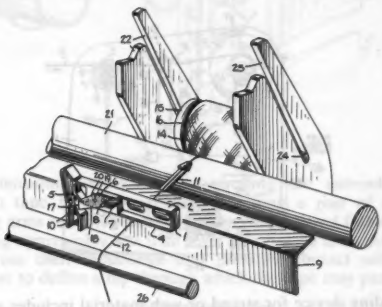
A method for collecting litter scattered over a course by traversing the course with three elements connected in tandem. A lead element collects the litter during movement along a traverse by picking up the litter with upwardly moving tines and by transferring the litter to an intermediate element which delivers the litter to the trailing element. The trailing element includes a flair drum which has hammer elements pivotally mounted thereon in order to fragmentize the litter by impact and also to drive the litter into a storage location in response to the impact.

3,595,490

APPARATUS FOR PROVIDING A THREAD RESERVE ON A WINDING BOBBIN OR THE LIKE

Max Schnetzer, and Helmut Ritter, both of Wattwil, Switzerland, assignors to Heberlein & Co. AG., Wattwil, Canton of St. Gallen, Switzerland

Filed Jan. 15, 1969, Ser. No. 791,428
Claims priority, application Switzerland, Feb. 5, 1968, 1679/68
Int. Cl. B65h *54/34*
U.S. Cl. 242—18 PW **4 Claims**



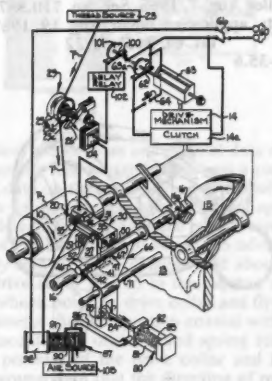
Apparatus for providing a thread reserve on a winding bobbin or the like wherein the advancing thread is shifted from the reserve area on the winding device to the takeup area with a minimum of manual operations when a new winding device is started.

3,595,491

METHOD AND APPARATUS FOR SECURING THE END OR TAIL OF A TEXTILE STRAND TO A WOUND PACKAGE

Archille O. Bourque, Gastonia, N.C., assignor to American & Efird Thread Mills, Inc., Mt. Holly, N.C.

Filed Nov. 17, 1969, Ser. No. 877,181
Int. Cl. B65h *54/02, 55/00*
U.S. Cl. 242—18 R **17 Claims**



A textile thread, yarn or other textile strand material is guided to a rotatable carrier through the eye of a traversing

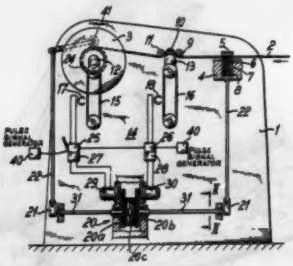
needle or similarly pointed thread guide to form a wound package and, upon completion of the package, the needle is thrust momentarily through outer layers of the thread on the package, carrying the thread in the needle with it, to loop the thread between such outer thread layers. As the needle is retracted and thus withdrawn from the package, the loop of the thread remains tucked between the outer layers of the package. The package is then doffed, the thread is parted between the needle and the package, an empty carrier is positioned on the winder spindle, and winding of a new package is initiated.

3,595,492

WINDING DEVICE FOR STRAND OR WEB MATERIAL

Stefan Furst, Monchengladbach, Germany, assignor to Walter Reiners, Monchengladbach, Germany

Filed May 5, 1969, Ser. No. 821,783
Claims priority, application Germany, May 8, 1968, P 17 74 229.9
Int. Cl. B65h *25/00, 59/00*
U.S. Cl. 242—75.51 10 Claims



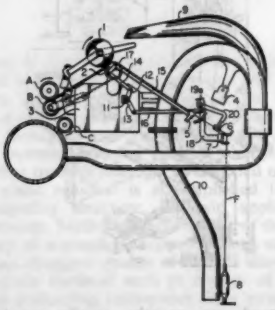
Winding device for strand or web material includes means for winding the material into a wound body, means for producing a value proportional to the number of rotations of the wound body, means for producing a value proportional to the length of the material being wound, storage means connected with both of the value producing means for storing, in an initial winding operation, the values of lengths of wound material appertaining to a respective predetermined number of rotations or vice versa, and control means couplable to the storage means for controlling tension of the material or pressure exerted on the windings of the wound body, in a subsequent winding operation.

3,595,493

DEVICE FOR USE WITH YARN CLEARER AUTOMATIC WINDERS

Shin Tsukuma, Itami-shi, and Toshiyuki Adachi, Amagasaki-shi, both of, Japan, assignors to Kamitsu Seisakusho Ltd., Itami-shi, Hyogo-Ken, Japan

Filed Aug. 7, 1968, Ser. No. 750,887
Claims priority, application Japan, Aug. 19, 1967, 42/53186
Int. Cl. B65h *54/22*
U.S. Cl. 242—35.6 6 Claims



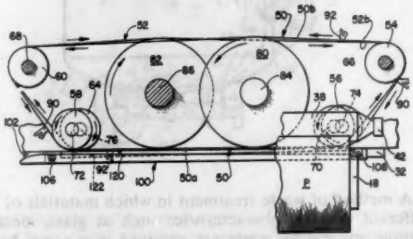
An improved yarn clearer device for use with an automatic winder having a plurality of winding units and knotting devices. A yarn clearer is mounted for movement from a normal working position wherein it clears yarn before same is wound on a package to a position adjacent to the knotting device when the supply yarn breaks or is exhausted. The end of yarn retrieved from the package is led to the knotting device and passes through the displaced yarn clearer after which the yarn clearer is returned to the normal working position without any of the yarn escaping out of the yarn clearer whereby the yarn clearer inspects the yarn just after completion of the yarn piecing operation of the knotting device.

3,595,494

WINDING MACHINE

William V. Goodhue, North Kingstown, R.I., assignor to Leesona Corporation, Warwick, R.I.

Filed May 23, 1969, Ser. No. 827,328
Int. Cl. B65h *54/28*
U.S. Cl. 242—43 18 Claims



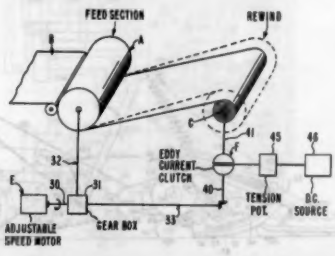
A winding machine incorporating yarn-traversing mechanism having a pair of oppositely moving belt spans, each provided with yarn-engaging guides or fingers operable in a yarn-traversing zone to move the yarn along a path in a controlled manner to wind a package of yarn, the yarn being transferred at each end of the package from an active finger traversing the yarn in one direction axially of the package to an oppositely moving finger. In the yarn-traversing zone each of the belt spans moves generally parallel to the axis of the package being wound. Means are provided for causing the yarn to slide gradually outwardly along the finger which is traversing it as the yarn progresses axially across the package. Said means is so configured that the yarn is caused to disengage from its finger at a locus corresponding to an end of said package whereupon the yarn is disposed for immediate engagement by an oppositely moving finger which traverses the yarn in the opposite direction. Reciprocation of the yarn axially to and fro of the package is thus achieved.

3,595,495

EDDY CURRENT CLUTCH ACTUATED REWINDER

Peter Cloeren, Hayward, Calif., assignor to Guardian Packaging Corporation, Newark, Calif.

Filed Mar. 17, 1969, Ser. No. 807,762
Int. Cl. B65h *51/30, 59/38*
U.S. Cl. 242—75.51 1 Claim



A web processing machine is provided with a single-variable speed motor as a source of power. The motor through

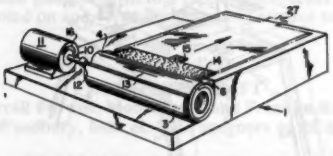
connected gearing provides power outputs to a web metering feed section and a web rewind section which respectively feed and wind the continuously advancing web. An eddy current coupling between the metering feed section and rewind section is connected to a voltage source which provides excitation to the eddy current coupling coil. The eddy current coupling provides an adjustable horsepower output which is directly proportional to the speed of the advancing web. The torque output of the eddy current coupling is directly proportional to the difference in speed of the coupling's rotation input and output members. The above arrangement provides uniform web tension at all speeds of the web processing machine.

3,595,496

DEVICES FOR THE PACKING AND SAFE TRANSPORT OF FLAT ARTICLES OF FLEXIBLE MATERIAL

Hans J. Nidecker, Unt. Rebgasse 18, Basel, Switzerland

Filed Feb. 17, 1969, Ser. No. 799,799
Claims priority, application Switzerland, Feb. 15, 1968, 17,454/68
Int. Cl. B65h *17/02, 75/48*
U.S. Cl. 242—67.1 R **8 Claims**



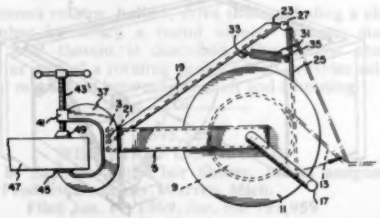
A slitted cassette for storing a flexible sheet on a spool rotatably mounted in the cassette. Two protective sheets are secured at one end to the spool and have a handle at the opposite end thereof, and a stop prevents the handle from passing through the cassette slit and makes the handle graspable when the protective sheets are withdrawn into the cassette around the spool. For storage, the flexible sheet is placed between the protective sheets projecting outwardly through the slit and supported on a flat surface, and the protected flexible sheet is then wound up on the spool and thus stored in the cassette while it may be withdrawn therefrom by grasping the handle.

3,595,497

TROTLINE REEL AND MOUNTING AND OPERATING MEANS THEREFOR

Horace Boatright, Dom Bldg., Temple, Tex.

Filed May 2, 1969, Ser. No. 821,237
Int. Cl. B65h *75/00*
U.S. Cl. 242—99 **1 Claim**



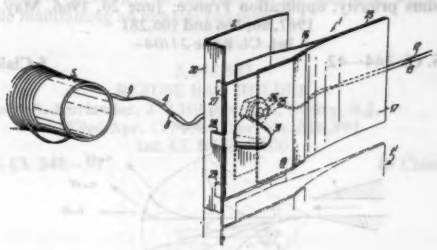
A trotline reel having a U-shaped basic frame, a reel rotatably mounted between the arms of the frame and adjacent the free ends thereof, a rigid bar fixed to the bridge of the frame and extending therefrom toward and spaced above the body of the reel, a brake and a backlash eliminator pivotally mounted on the end of the rigid bar and extending downwardly therefrom toward and in engagement with the reel body and/or the line wound thereon, and biasing means fixed to the rigid bar and the brake and backlash eliminator in position constantly urging said brake and backlash eliminator toward and into engagement with the reel and/or the line thereon.

3,595,498

TENSION DEVICE FOR A TEXTILE MACHINE

John K. P. Mackie, Belfast, Ireland, assignor to James Mackie & Sons Limited, Ireland

Filed Jan. 15, 1969, Ser. No. 791,386
Claims priority, application Great Britain, Jan. 23, 1968, 3541/68
Int. Cl. B65h *59/22*
U.S. Cl. 242—149 **6 Claims**



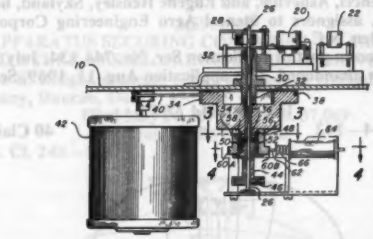
A tensioning device for controlling the unwinding of plastic tape from a package comprising a pair of similar spring arms mounted side-by-side in cantilevered fashion at a spacing appreciably less than their lengths, the arms converging from their mountings into pressure contact with one another to define a nip through which the tape may pass.

3,595,499

APPARATUS FOR MOVING TAPE INCREMENTALLY PAST A RECORDING HEAD

Robert L. Crafts, Tulsa, Okla., assignor to The Telex Corporation, Tulsa, Okla.

Filed Nov. 21, 1969, Ser. No. 878,820
Int. Cl. B11b *15/32;* **G03b** *1/04*
U.S. Cl. 242—206 **6 Claims**



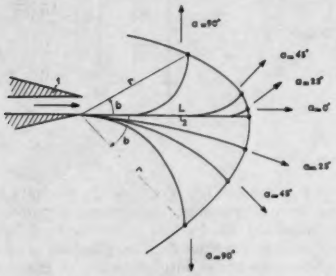
This invention relates to an incremental data recording apparatus for moving tape incrementally past a recording head for recording data on the tape. More particularly, the invention relates to an incremental tape recording apparatus having a rotatable capstan shaft against which tape is pressed, the rotation of the capstan shaft serving to advance the tape, a continuously rotated flywheel supported about the capstan the shaft, a drive collar affixed to the capstan shaft and adjacent the flywheel, both the drive collar and flywheel having a reduced diameter shoulder portion coaxial with the capstan shaft and adjacent each other, a coil spring received about the shoulder portions of the drive collar and flywheel, the spring being wound such that the direction of rotation of the flywheel tends to wind the spring tight about the flywheel shoulder and drive collar shoulder to rotate the drive shaft, the spring having a radially extending tang at one end, a tubular ratchet member received about the spring having a

notch therein receiving the tang, the ratchet member having a dog extending from the external surface, and a ratchet release bar normally engaging the ratchet member dog to prevent the rotation of the spring, the ratchet release bar being movable out of contact with the ratched dog whereby the rotation of the flywheel rotates the spring and thereby the drive collar and capstan shaft, the capstan shaft rotating until the ratchet release bar is repositioned to engage the ratchet member dog.

3,595,500
JET FLAP CONTROLLING MEANS

Marcel Kretz, 7, Square de Port-Royal, Paris 13e, France

Division of Ser. No. 645,771, June 13, 1967, Pat. No. 3,481,560
Filed July 25, 1969, Ser. No. 844,964
Claims priority, application France, June 20, 1966, May 12, 1967, 66, 166 and 106,281
Int. Cl. B64c *21/04*
U.S. Cl. 244—42 **5 Claims**

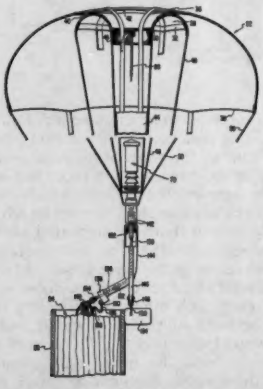


The invention resides basically in jet flap control means in which an aerofoil having a jet slit trailing edge is provided with a flexible deflecting flap arranged along the lower lip of said slit and extending rearwardly therefrom, control means adapted to impart upward and downward flexure of said flap having a sandwiched structure including thin metal sheets with interposed elastomeric material between them.

3,595,501
PARACHUTE DEPLOYMENT SYSTEM, INCORPORATING A ROCKET

Fred B. Stencel, Asheville, and Eugene Hensley, Skyland, both of, N.C., assignors to Stencel Aero Engineering Corporation, Arden, N.C.

Continuation-in-part of application Ser. No. 744,134, July 11, 1968, now abandoned. This application Aug. 11, 1969, Ser. No. 848,932
Int. Cl. B64d *17/72*
U.S. Cl. 244—142 **40 Claims**

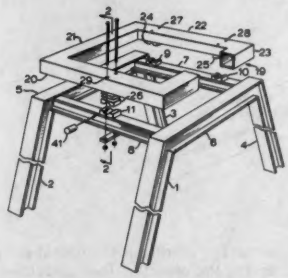


A parachute deployment system incorporating a rocket which fires in a downstream direction to extract and deploy the parachute. A pilot parachute means orients the rocket in the downstream direction within the airstream. However, a control means prevents the rocket from igniting until a preselected condition, such as a time lapse, has occurred. When the preselected condition occurs, a release means frees the control means and enables the rocket to ignite, whereupon the rocket will be propelled downstream, thus extracting the parachute from its container and deploying it into the airstream in a downstream direction. Reefing means can be employed to keep the mouth of the parachute canopy reefed until the parachute lines are fully stretched.

3,595,502
COUPLING ASSEMBLY FOR BEDPLATE AND SUPPORTING STRUCTURE

Leslie C. Galloway, Burlington, Ontario, Canada, assignor to Canadian Westinghouse Company Limited, Hamilton, Ontario, Canada

Filed June 12, 1969, Ser. No. 832,638
Int. Cl. F16m *5/00, 7/00*
U.S. Cl. 248—13 **6 Claims**

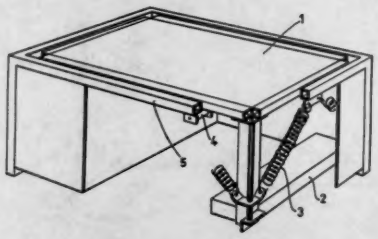


This invention relates to a method of coupling and supporting a rigid bedplate and a supporting structure. The bedplate is supported on a roller assembly on a structural member which is able to twist about an axis perpendicular to the axis of the roller in the roller assembly and thus minimize transmission of deforming stresses to the bedplate.

3,595,503
VIBRATION-ISOLATED SYSTEM

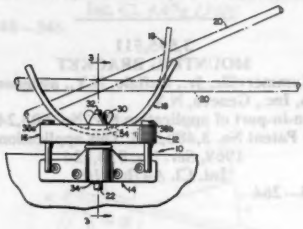
Robert Tidblad, deceased, late of Vallingby, Sweden (by Kristina Tidblad, legal representative), assignor to LKB-Produkter AB, Bromma, Sweden

Filed Mar. 21, 1969, Ser. No. 810,087
Claims priority, application Sweden, Mar. 22, 1968, 3813/68
Int. Cl. F18f *15/00*
U.S. Cl. 248—21 **7 Claims**



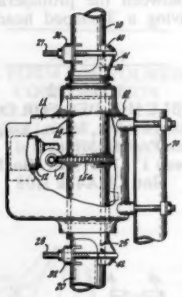
A system is isolated from disturbances having low amplitude, the isolation consisting of a number of oblique resilient elements and a number of damping elements functionally coupled in parallel with the oblique resilient elements. Both the oblique resilient and the damping elements are connected with an isolating part in an outer frame. The damping elements have no supporting function and act nonlinearly. This system is useful for sensitive instruments and tools, as ultramicrotomes.

3,595,504
FISHING ROD HOLDER
Howard C. Anderson, Accord, N.Y., and Gerald L. Barrows, 6926 Sy Road, Niagara Falls, N.Y.
Filed Jan. 13, 1969, Ser. No. 790,738
Int. Cl. A01k 97/10
U.S. Cl. 248—42 5 Claims



Fishing rod holders including a base angularly adjustable in a horizontal plane relative to a supporting bracket and a cradle mounted on and vertically adjustable relative to the base.

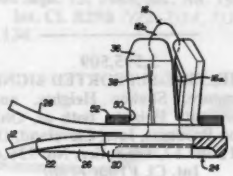
3,595,505
ROTATABLE SHAFT
Neil Worrall Burwell, Moorestown, and Franklin Roosevelt Di Meo, Woodbury, both of, N.J., assignors to RCA Corporation
Filed Mar. 24, 1969, Ser. No. 809,662
Int. Cl. H01q 1/12
U.S. Cl. 248—43 6 Claims



An antenna rotator, hollow, drive shaft including a clamping member by which a round tubular antenna mast is securely held therein is described. The hollow shaft is mounted as part of a rotating device which provides relative rotational movement between the shaft and a housing.

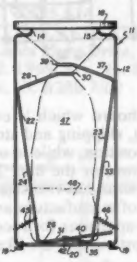
3,595,506
WIRE STRAP CONNECTOR
Thomas B. Saunders, St. Clair Shores, Mich., assignor to Robin Products Company, Warren, Mich.
Filed Jan. 17, 1969, Ser. No. 791,959
Int. Cl. F16l 3/14
U.S. Cl. 248—71 12 Claims

A resilient fastener comprising an elongated strap having a hollow anchor member on one end thereof receivable through an aperture in a support with a locking member carried by the opposite end of the strap and receivable in the anchor member to lock the strap to the apertured support. The strap end supporting the locking member has a reduced area thickness surrounded by a reinforced thickness and spaced from the connection between the locking element and the strap so as to produce a diaphragm action between the locking element and the adjacent end of the strap allowing



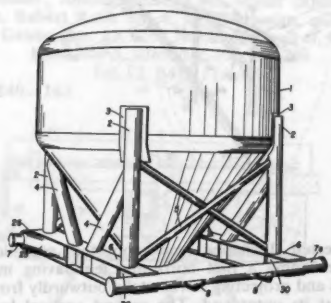
for relative movement of the strap on the apertured support while maintaining an integral connection.

3,595,507
REFUSE BAG HOLDER
Robert A. Kurlander, 277 Hillside Ave., Nutley, N.J.
Filed Apr. 17, 1969, Ser. No. 816,891
Int. Cl. B65b 67/00
U.S. Cl. 248—97 15 Claims



A refuse bag holder comprising means for supporting a flexible, crushable refuse bag with the top edge open and means for cinching the bag beneath the open top thereof to effect a closure, the cinching means normally closing the container and operable to open the container preferably by means of a foot treadle.

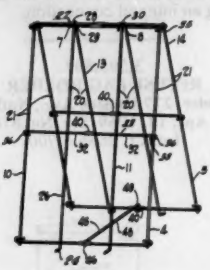
3,595,508
APPARATUS SECURING CONTAINER TO AIRCRAFT AND OTHER VESSEL CARGO COMPARTMENT FLOORS
John E. Knight, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.
Filed May 14, 1970, Ser. No. 37,069
Int. Cl. B61d 17/00
U.S. Cl. 248—146 11 Claims



This invention relates to a tank unit which can be transported by aircraft and more particularly to the structure of

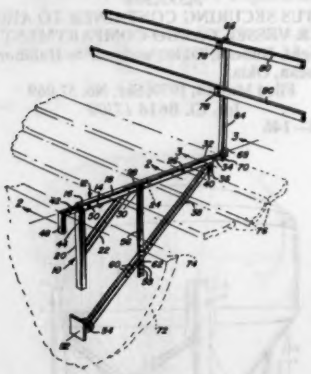
the tank-supporting unit and its fastening devices which are able to withstand forces bearing on the tank unit through normal aircraft operation as well as considerable forces induced thereon through turbulent weather and forced landings.

3,595,509
A-FRAME, TIRE-SUPPORTED SIGNBOARD
Harold J. Gilmoure, Shaker Heights, and William B. Comiskey, University Heights, both of, Ohio, assignors to Sales Promotion Products, Inc., Cleveland, Ohio
Filed June 12, 1968, Ser. No. 736,467
Int. Cl. F16m *11/00*
U.S. Cl. 248—175 **16 Claims**



An A-frame signboard which is collapsible and separable for ease of handling, shipping and storage and is secured and held in an upright position, while in use, by coaction with and mounting within a tire, or the like. The signboard is formed of bent and shaped wire, has two essentially similar halves for ease and efficiency of manufacture and includes a plurality of shaped and formed apertures for reception of mounting bolts for holding signs, posters, and the like, thereon.

3,595,510
CONVERTIBLE SCAFFOLD
Curtis B. Hutchinson, 710 E. College St., Valdosta, Ga.
Filed Sept. 10, 1969, Ser. No. 856,641
Int. Cl. E04g *5/04, 3/00*
U.S. Cl. 248—235 **7 Claims**



An inverted L-shaped wall-supported scaffold brace member including a first horizontal leg having inner and outer ends and projecting horizontally outwardly from a wall structure at its outer end. The second vertical leg of the brace member depends from the inner end of the first leg downwardly along the outer surface of the wall structure. The first leg defines a tubular receiver, square in cross-sectional shape, open at its inner end and an elongated tension arm which is also square in cross-sectional shape is slidably received in the receiver in selected angular positions rotated 90° apart about its longitudinal axis. The tension arm includes, on its end projecting outwardly of the inner end of the horizontal leg, a lateral abutment portion for engagement with the inner surface of the wall structure adjacent an opening in the wall structure through which the tension arm extends. Further, the tension arm and receiver include coacting structure whereby the tension arm may be secured in adjusted longitudinally shifted position relative to the receiver.

3,595,511
MOUNTING BRACKET
Donald V. Summerville, Jr., Buffalo, N.Y., assignor to Gardco Industries, Inc., Geneva, N.Y.
Continuation-in-part of application Ser. No. 603,240, Dec. 20, 1966, now Patent No. 3,480,243. This application Mar. 25, 1969, Ser. No. 810,124
Int. Cl. A47h *1/10*
U.S. Cl. 248—264 **6 Claims**

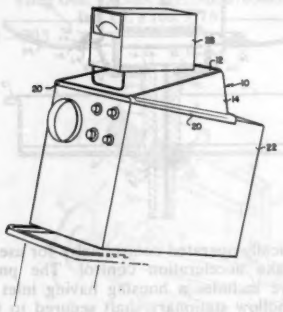
A mounting bracket for a window shade roller or a curtain rod including a body member having first and second surfaces with pressure-sensitive adhesive on the first surface and a protuberance extending from the second surface with an aperture therein for receiving either a keylike member or pin extending from the end of a window shade roller. A cutaway may be formed between the protuberance and the body member for receiving a T-shaped head of a curtain rod bracket.

3,595,512
RELEASABLE HOLDER FOR CONTAINER
Paul A. Enblom, Eden Prairie, Minn., assignor to Judd Ringer Corporation, Eden Prairie, Minn.
Filed June 17, 1969, Ser. No. 834,081
Int. Cl. A47k *1/08*
U.S. Cl. 248—313 **4 Claims**

A holder for securing an elongated cylindrical container to a tubular member, the holder consisting of two parts which are clamped about the container, at least one of these two parts being of yieldable material and one of the two parts having yieldable curved gripping walls. The opposed faces of the two clamping members have longitudinal recesses, the walls of which engage the tubular member. The nuts and boltheads of the fastening members are disposed in slots so as not to project beyond the outside walls of the holder. The

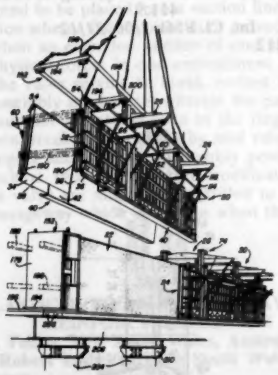
holder is particularly adapted for holding a can of insecticide on the handle bar of a power operated implement.

3,595,513
PORTABLE TEST INSTRUMENT LEVELER AND SUPPORT
Robert N. Rehlaender, 149 Cervantes Road, Redwood City, Calif.
Filed Apr. 11, 1969, Ser. No. 815,426
Int. Cl. A47g 23/00
U.S. Cl. 248—346 6 Claims



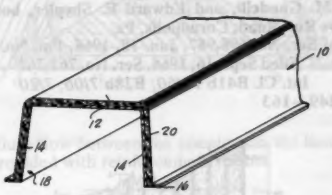
A portable support having a flat, recessed top surface inclined at an oblique angle from the horizontal is provided with a lower lip for engaging the upper portions of the front and side panels of a first test instrument tilted backward at the same oblique angle. This lip holds the support in place on top of the tilted first test instrument so that the top surface of the support forms a level platform for supporting a second test instrument.

3,595,514
ADJUSTABLE FORM FOR POURED CONCRETE CONSTRUCTION
Jack Sanders, 2100 St. Charles Ave., New Orleans, La.
Filed July 17, 1968, Ser. No. 745,523
Int. Cl. B28b 7/22
U.S. Cl. 249—13 13 Claims



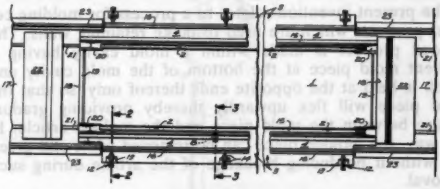
An adjustable preassembled and self-contained form comprising a pair of laterally spaced braced form walls pivotally suspended from a series of overhead crossbeams or outriggers. The form walls are adjustable so as to assume either a parallel forming position or an outwardly swung placing and removal position. End walls are also provided for relative adjustment to vary the effective length of the form.

3,595,515
LAMINATED CONCRETE FORM
William B. Rollow, 7509 Cantrell Road, Little Rock, Ark.
Filed Sept. 13, 1968, Ser. No. 759,716
Int. Cl. B29b 7/22, 7/34, 7/36
U.S. Cl. 249—134 4 Claims



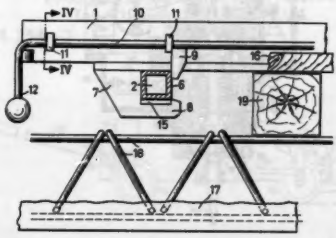
A device for use in concrete slab-joist construction comprising a form over which concrete is poured, including a polymer sheet, and a polymer foam layer, which can be disposed over the outside of the sheet, or which layer may be disposed inwardly of the sheet, or which layer may be disposed both inside and outside of the sheet, so that the completed form is a laminated structure.

3,595,516
FORM FOR CASTING CONCRETE STRUCTURAL UNITS
Edward K. Rice, 2077 Linda Flora Drive, Los Angeles, Calif.
Filed June 2, 1969, Ser. No. 829,224
Int. Cl. B28b 7/02
U.S. Cl. 249—155 4 Claims



A form for casting structural units of the type involving at least a concrete slab and side beams and may include end beams and corner legs, the form including beam casting forms slidable a limited distance on an underlying surface between a casting position and a clearance position, each beam casting form being itself a concrete structure secured to the underlying structure by steel straps the extremities of which are anchored in the beam casting form and the underlying structure, whereas the central portions are encased in an elastomer to permit limited movement of the beam casting form.

3,595,517
FORM FOR MAKING CONCRETE SLAB
Fritz Grebner, Annabergstr. 70, 65 Mainz (Rhine); Wihel Kolsch, Robert Kooh Str. 6, 62 Wiesbaden, and Eckhard Wink, Geisbergstr. 29, 6201 Nordenstadt, all of, Germany
Filed July 3, 1968, Ser. No. 742,296
Int. Cl. B41b 11/60
U.S. Cl. 249—163 3 Claims



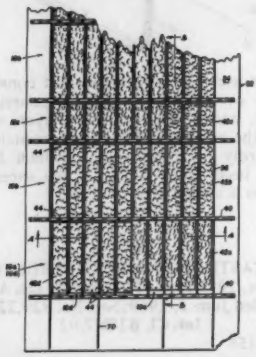
A form for making concrete slabs comprises a closed frame having transverse beams detachably affixed to its un-

derside and a panel positioned on the beams within the frame and constituting the bottom of the form.

3,595,518
MOLD BED FOR MOLDING CEMENTITIOUS PRODUCTS

Edmond M. Gaudelli, and Edward E. Shepler, both of 890 Narrows Run Road, Coraopolis, Pa.

Division of Ser. No. 698,987, Jan. 18, 1968, Pat. No. 3,426,122
Filed Sept. 16, 1968, Ser. No. 762,262
Int. Cl. B41b *11/60*; B28b *7/06, 7/20*
U.S. Cl. 249—163 5 Claims

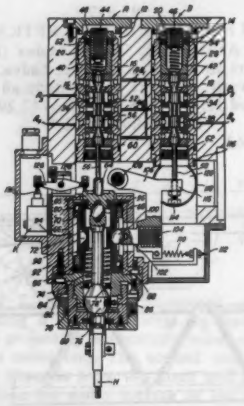


The present invention relates to a process for molding cement products which are used to make retaining walls. The molded product is made within a mold cavity having a resilient mold piece at the bottom of the mold cavity and which is held at the opposite ends thereof only, so that the mold piece will flex upwardly thereby providing gradual release between the mold piece and the molded article. In this way, the molded piece can be removed while still green and without producing breakage of the article during such removal.

3,595,519
HYDRAULIC TRACER MECHANISM ADAPTED FOR USE WITH MACHINE TOOLS IN GENERAL

Angelo Girola, Busto Arsizio, Varese, Italy, assignor to Duplomatic Meccanica Applicazioni Oleodinamiche, S.p.A.

Filed Apr. 11, 1969, Ser. No. 815,362
Claims priority, application Italy, Apr. 12, 1968, 15,228 A/68
Int. Cl. B23q *35/16*
U.S. Cl. 251—3 5 Claims

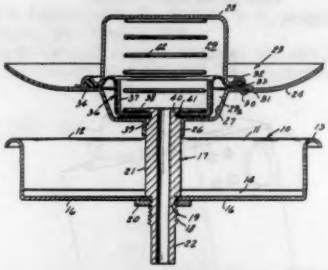


A hydraulic tracer mechanism for milling cutters, wherein two control units, driven by the stylus or tracer point, are so arranged that the longitudinal axes of said units are parallel to each other and parallel to the stylus or tracer point axis.

3,595,520
CARBURETOR AIR INTAKE ACCELERATION CONTROL

Goerge A. Soberski, Des Plaines, Ill., assignor to Eaton Yale & Towne Inc.

Filed Apr. 1, 1968, Ser. No. 717,737
Int. Cl. F16k *31/365*
U.S. Cl. 251—61.2 5 Claims

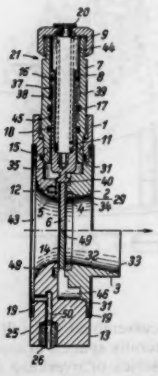


A pneumatically operated control valve for use in a carburetor air intake acceleration control. The pneumatically operated valve includes a housing having inlet and outlet ports and a hollow stationary shaft secured to the housing and extending toward one of the ports to receive at the end of the shaft a valve member. The valve member is movably secured to the shaft so as to slide on the shaft and overlie the port thereby controlling the flow of fluid through the valve. A pneumatic control chamber is formed within the valve member and in fluid communication with an air supply through the hollow portion of the stationary shaft. The control chamber has a movable wall therein formed by a diaphragm connected between the valve member and the end of the shaft. Applying air pressure to the control chamber of the valve member causes the valve member and the control chamber to be actuated.

3,595,521
GATE VALVE WITH HYDRAULICALLY OPERATED SHUTOFF DEVICE

Werner Lorentz, Hamburg, Germany, assignor to Alfons Haar, Maschinenbau, Hamburg, Germany

Filed July 28, 1969, Ser. No. 845,150
Claims priority, application Germany, Aug. 8, 1968, P 17 75 411.9
Int. Cl. F16k *3/00, 31/12*
U.S. Cl. 251—212 12 Claims



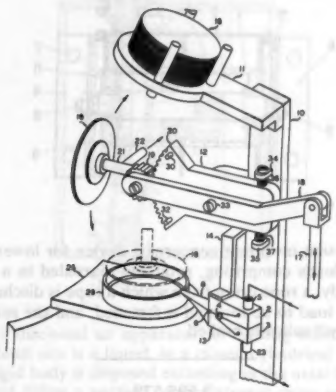
The valve comprises a valve housing with a flow passage and two shutoff members arranged for transverse displace-

ment to and from another in the flow passage. The shutoff members are actuated each by a hydraulic servomotor mounted at the housing. One servomotor is associated with a delay element by which the closing movement of the respective shutoff member is delayed with respect to the closing movement of the other member. Pressure peaks with rapid valve closing can be avoided by this construction. The valve is suitable for remote and automatic flow control of fluids.

3,595,522
VACUUM BREAKER VALVE

Guy L. Kelly, Kansas City, Kans., assignor to Phillips Petroleum Company

Division of Ser. No. 631,694, Apr. 19, 1967, Pat. No. 3,507,030
Filed Dec. 9, 1969, Ser. No. 870,463
Int. Cl. F16k *1/16*
U.S. Cl. 251—303 **6 Claims**



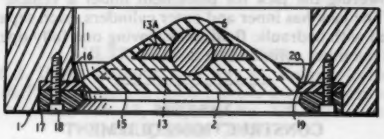
A vacuum breaking valve assembly having two members, each of which has at least one smooth face, the members being juxtapositioned with the smooth face of one member facing, and in closed position, engaging the smooth face of the other member, the said members being hinged or otherwise held together at adjacent ends thereof to permit them to move away from and toward each other, said members being spring biased toward each other, at least one of said members being machined or drilled to provide using them both when in engaged relationship a continuous passage, said valve being adapted to be placed into a suction line and therein to break suction when a face is pivoted or moved away from the other as when an extended portion of one member is acted on by a physical force; in one embodiment in an assembly machine the valve serving to break suction in a paper disc and ring assembly mechanism wherein the paper disc is carried by a suction actuated device to the ring for placement therein upon breaking of suction by said valve as it is acted on by bringing said ring into assembly position of the assembly machine. In a now preferred modification, both members of the valve are machined or drilled to provide a continuous passageway which is broken when the members are separated.

3,595,523
PLASTIC BUTTERFLY VALVE HAVING A REINFORCEMENT BLADE

George A. Felton, New South Wales, Australia, assignor to George Robert Embelton, New South Wales, Australia, a part interest

Filed Apr. 14, 1969, Ser. No. 826,043
Claims priority, application Australia, Apr. 19, 1968, 36,623/68
Int. Cl. F16k *1/226*
U.S. Cl. 251—306 **16 Claims**

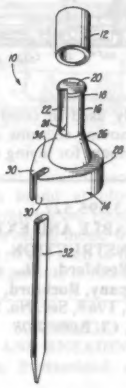
A butterfly vale which includes a valve body of plastic material, having two separately positioned openings for connection in a pipeline; and a blade which is also constructed substantially from plastic material. The blade is journaled in the housing so as to be rotatable to a position wherein it prevents fluid flow between the openings in the housing. The blade is provided with reinforcement means.



3,595,524
SPRAY STRUCTURE

David E. Mominee, Covina, Calif., assignor to Byron Curry, Arcadia, Calif.

Filed Feb. 25, 1970, Ser. No. 13,992
Int. Cl. F16k *31/58*
U.S. Cl. 251—342 **11 Claims**

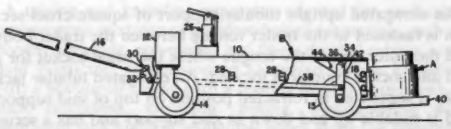


A two part spray structure or valve intended to be used in watering plants is disclosed. One of the parts of the valve includes a member of uniform cross-sectional configuration having a groove extending along its length from one of its ends. A resilient tube adapted to be connected to a source of water under pressure is located over this end of the member. By regulating the position of the tube upon the member with respect to the groove it is possible to control the flow of water from within the interior of the tube.

3,595,525
PORTABLE AIRCRAFT JACK

Edward E. Yaste, Burlingame, Calif., assignor to Powerflow Engineering and Equipment Company, Inc., Palo Alto, Calif.

Filed July 15, 1968, Ser. No. 744,994
Int. Cl. B60p *1/00*; B66f *3/24*
U.S. Cl. 254—2 **6 Claims**



A portable aircraft jack in which a double cylinder hydraulic jack is rigidly mounted at one end of a wheeled trailer

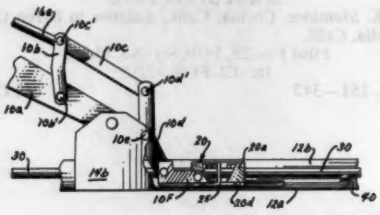
which has a towing handle at the opposite end. The rear trailer wheels are mounted on pivot arms connected to the handle by a linkage so that raising the handle will pivot the wheel arms and cause the rear of the trailer to be lowered thus lowering the jack for placement under a vehicle to be lifted. The jack has inner and outer cylinders, each separately supplied with hydraulic fluid, thus leaving one fully operative should the other cylinder fail.

3,595,526

CONSTRUCTION EQUIPMENT

William E. Faver, Evansville, Ind., assignor to Edith Faver, Evansville, Ind.

Filed July 11, 1969, Ser. No. 840,906
Int. Cl. E21b *19/00*
U.S. Cl. 254—31 **7 Claims**



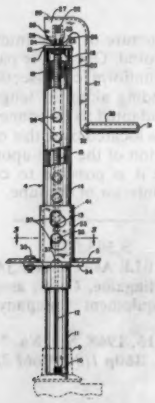
An apparatus, typically used in combination with a conventional backhoe, for moving sections of rod, as, for example, as part of an arrangement for laying underground pipes.

3,595,527

QUICKLY RETRACTABLE AND EXTENSIBLE JACK CONSTRUCTION

Burdette L. Douglass, Rockford, Ill., assignor to Atwood Vacuum Machine Company, Rockford, Ill.

Filed July 14, 1969, Ser. No. 841,304
Int. Cl. B60s *9/08*
U.S. Cl. 254—86 **19 Claims**



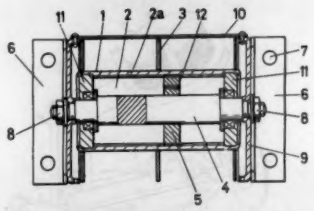
An elongated upright tubular support of square cross section is fastened to the trailer tongue between the trailer body and the outer end of the tongue where the usual socket for a ball and socket coupler is located. An elongated tubular jack body is supported in retracted position on top of said support and is slidable up and down in said support and has a series of radial projections therein which can be passed through a passageway in one corner portion of said support when extending the jack body downwardly to or retracting the same from operative position, these projections being adapted to be entered for a rough adjustment in L-shaped slots provided in said support and communicating by one leg of the L with said passageway. Then the jackscrew, operable from the upper end of said jack body adjusts the load carrying member that is slidable in the jack body to make the fine adjustment, seating one or two projections in the upper end of the slot or slots.

3,595,528

DEVICE FOR LOWERING PERSONS AND LOADS

Jalmari Selim Virkki, Tuulitie 5, Vantaa, Finland

Filed Feb. 25, 1969, Ser. No. 801,998
Int. Cl. A62b *1/12*
U.S. Cl. 254—160 **1 Claim**



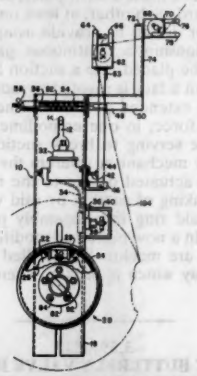
The present invention concerns a device for lowering persons and loads comprising, rotatably journaled in a suitable device body, a rope drum from which a rope is discharged, to which the load to be lowered is fastened, and the rotation of which is hydraulically braked.

3,595,529

PAYOUT ASSEMBLY

William T. Stull, and Earl A. Story, both of Cincinnati, Ohio, assignors to Alaskaug, Inc., Cincinnati, Ohio

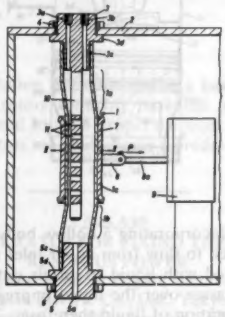
Filed Sept. 29, 1969, Ser. No. 861,755
Int. Cl. B66d *1/48*
U.S. Cl. 254—173 **7 Claims**



The disclosure illustrates a payout assembly for a pilot line that is used to initially span the distance between two spaced positions and to pull a heavier line, such as an electrical conductor, between the positions. The payout assembly comprises a hydraulic vehicle-type brake assembly mounted on a channel-shaped base and adapted to receive a reel having a pilot line coiled on it. A master cylinder assembly, connected to the brake assembly through a locking valve, is actuated by a pivotal arm. The arm is biased to a position wherein the brake assembly is actuated to resist rotation of the reel. The

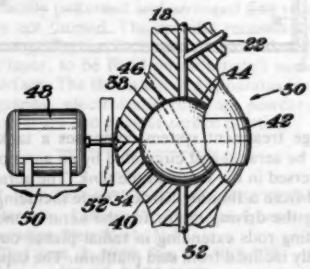
line is trained around a pulley at the free end of the arm so that, only when the line is pulled, the brake assembly is disengaged to permit unreeling of the line. This prevents overrun of the line being pulled from the reel. The pulley and the brake assembly provide rapid and easy installation and removal of the reel.

3,595,530
APPARATUS FOR MIXING SUBSTANCES
Ernst Hubers, Franzstrasse, 429 Bocholt, Germany
Filed Jan. 19, 1970, Ser. No. 4,017
Claims priority, application Germany, Jan. 17, 1969, P 19 02 200.5
Int. Cl. B01f *11/00*
U.S. Cl. 259—2 **5 Claims**



There is disclosed an apparatus for mixing substances of which at least one is a liquid, in a closed cylindrical vessel in which a rigid body is disposed extending in the axial direction thereof and filling a portion of the internal cross section of the vessel, wherein at least terminal members positioned adjacent terminal closure members of said vessel are composed of a material readily movable out of the axial direction of said vessel, a portion of said vessel disposed between said terminal members being provided with a reciprocating drive acting transverse of the axial direction thereof.

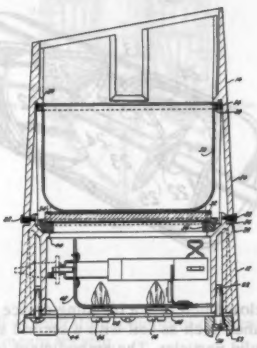
3,595,531
MIXER APPARATUS
Alan J. Williams, and Charles J. Starnes, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.
Filed Nov. 4, 1969, Ser. No. 873,806
Int. Cl. B01f *7/02, 13/08*
U.S. Cl. 259—7 **6 Claims**



This invention relates to apparatus for use in indicating the presence of substances in a small stream of liquid, and particularly to mixing apparatus for use in connection with chromatographic apparatus utilizing microcolumns.

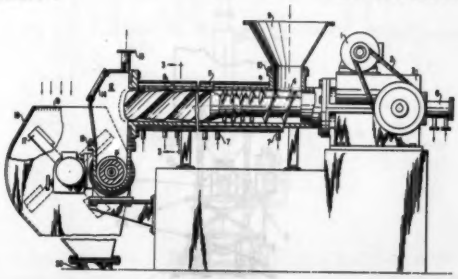
The apparatus is a spherical chamber having a close-fitting ball therein, a pair of inputs and an output. The ball is non-reactive with the materials to be mixed and has a magnet embedded therein. The sphere is in two parts to permit easy cleaning and/or replacement of the ball. External magnetic means cause rotation of the ball.

3,595,532
ULTRASONIC CLEANER
Edward J. Doyle, Hatboro, and Ray H. Enders, Columbia, both of, Pa., assignors to Shick Electric Inc., Lancaster, Pa.
Filed Feb. 12, 1969, Ser. No. 798,707
Int. Cl. B01f *11/02*
U.S. Cl. 259—72 **4 Claims**



An electromechanical device is provided for cleaning small items by agitating a liquid at ultrasonic frequency. The desired ultrasonic vibrations are produced by a piezoelectric crystal operating in its radial mode wherein the crystal and a receptacle for receipt of the item to be cleaned are floatingly mounted between two gaskets in resilient compression.

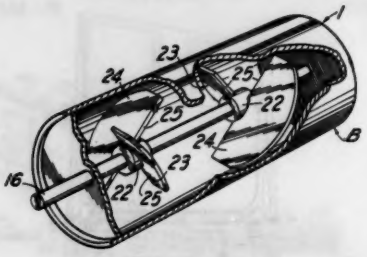
3,595,533
MIXING AND KNEADING DEVICE
Fritz Sutter, Pratteln, Switzerland, assignor to Buss A.G., Basel, Switzerland
Filed June 7, 1968, Ser. No. 735,295
Claims priority, application Switzerland, June 13, 1967, 8534/67
Int. Cl. B01f *7/08*
U.S. Cl. 259—40 **3 Claims**



A mixing and kneading apparatus adapted for producing homogeneous mixtures of powdered plastic materials, such as polyvinyl chloride, polyolefins and finely divided rubber, with liquid plasticizer comprising an elongated hollow kneading shaft, a horizontal casing with a feeding hopper at one end in which conveying, kneading, mixing, homogenizing and plasticizing take place in sequential zones along the kneading shaft which is simultaneously rotated and oscillated within the casing by motor, gear and drive means to reciprocate the shaft forward and backward for each revolution, and a jacket

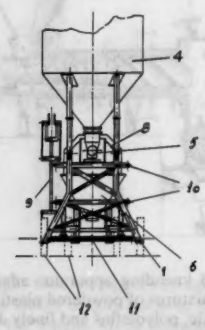
about the casing which is adapted for heating or cooling one or more of the zones. A receiver at the end of the casing remote from the hopper is provided with a rotary cutting device to chop the plasticized stream into granulated particles which are conveyed pneumatically into an outlet pipe.

3,595,534
BLENDING DEVICE
Robert F. Burton, 3141 Wynn Drive, Avondale Estates, Ga.
Division of Ser. No. 666,077, Sept. 7, 1967, Pat. No. 3,444,626
Filed Nov. 6, 1968, Ser. No. 773,791
Int. Cl. B28c 5/24
U.S. Cl. 259—85 4 Claims



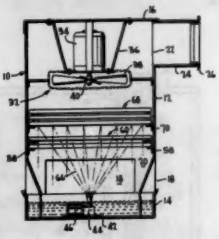
What is disclosed herein is a blending device for blending a particle substance such as soil with a second substance such as a fluid or solid particles. The embodiment of the blending device disclosed is a sealable and rotatable drum having deflecting plates within and rotatable with the drum. The deflecting plates are shaped and positioned to cause cascading of a particle substance dropping downwardly through a fluid after being carried upwardly by rotation of the drum and to provide a blending device well suited to the blending of soil with a fluid such as a soil-conditioning chemical and to other uses.

3,595,535
FRAMES FOR CARRYING AND TRANSPORTING CONCRETE-MAKING SYSTEMS
Luigi Zaccaron, Viale Venezia 369, 33100 Udine, Italy
Continuation-in-part of application Ser. No. 610,968, Jan. 23, 1967, now Patent No. 3,415,498, dated Jan. 23, 1967. This application July 26, 1968, Ser. No. 747,966
Claims priority, application Italy, Nov. 18, 1969, 833,443/69
Int. Cl. B28c 7/04
U.S. Cl. 259—165 3 Claims



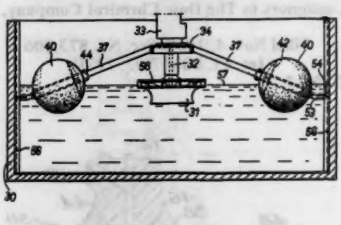
An expeditionary cement-mixing plant with the plurality of components needed for mixing the cement forming materials all mounted upon a wheel-supporting platform for transportation to the site of operations and including a swinging inert material or aggregate loader for picking up inert material or aggregate over adjacent areas with respect to the supported platform. All components including the swingable loader means being so proportioned and arranged on the platform as to be inboard of the platform during transportation to any desired cement mixing and spreading location.

3,595,536
AIR-COOLING DEVICE
Wayne H. Ripley, P.O. Box 2174, San Angelo, Tex.
Filed Aug. 26, 1968, Ser. No. 755,039
Int. Cl. B01d 47/06
U.S. Cl. 261—28 13 Claims



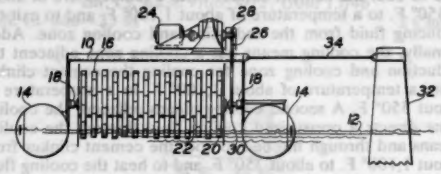
An air cooler incorporating a hollow body through which warm air is caused to flow from an air inlet means over elements impregnated with liquid to an air outlet means. The warm air as it passes over the liquid impregnated elements causes the evaporation of liquid therefrom. The heat that is required to effect the evaporation of the liquid is absorbed from the air passing over such elements and the air is cooled thereby.

3,595,537
APPARATUS FOR SEWAGE TREATMENT
Joseph Richard Kaelin, Villa Seeburg, Buochs, Nidwalden, Switzerland
Filed Nov. 25, 1968, Ser. No. 778,695
Claims priority, application Switzerland, Dec. 4, 1967, 16998/67
Int. Cl. B01f 7/16
U.S. Cl. 261—91 6 Claims



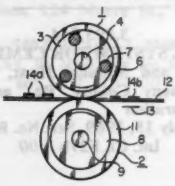
A sewage treatment system comprises a tank containing sewage to be aerated and circulated by an aeration rotor partially immersed in the liquid in the tank. The aeration rotor is suspended from a floating carrier frame including a platform supporting the driving motor for the aerator and a plurality of supporting rods extending in radial planes outwardly and downwardly inclined from said platform. The supporting rods extend with their outer ends through rough spherical floating bodies floating on the liquid to be treated in the tank. The free ends of the supporting rods projecting beyond said floating bodies are guided in vertical guide channels formed on the internal tank wall to hold said carrier frame against rotation in said tank but permitting unrestrained upwards and downward movement of the carrier frame according to the level of the sewage in the tank.

3,595,538
FLOATING AERATION ROTOR
Edward J. Baumann, Beloit, Wis., assignor to Beloit Passavant, Janesville, Wis.
Filed May 21, 1969, Ser. No. 826,601
Int. Cl. B01f 3/04
U.S. Cl. 261—92 3 Claims



A floating aeration rotor for use in a basin and having a pair of bladed rotors rotatably mounted in a frame. The blades are powered so as to propel the front blade about the basin and the rotors are guided over a predetermined path on the water.

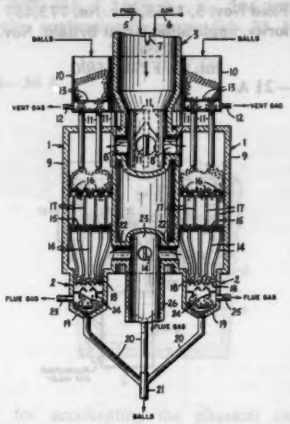
3,595,539
THERMAL APPARATUS FOR FIXING THERMOPLASTIC RESINOUS POWER
Takuhei Kimura, and Shinichi Isigaki, both of Tokyo, Japan, assignors to Iwatsu Electric Co., Ltd., Tokyo, Japan
Filed Jan. 12, 1970, Ser. No. 2,074
Claims priority, application Japan, Feb. 21, 1969, 44-12547
Int. Cl. G03g 13/20, 15/20
U.S. Cl. 263—6 E 8 Claims



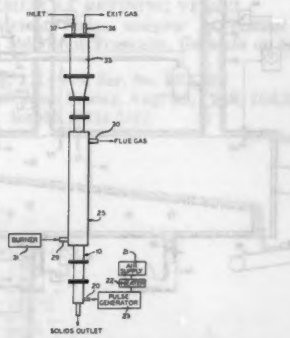
A thermal apparatus for fixing thermoplastic resinous powder which has an improved heating surface whereon numerous specifically patterned and arranged fine recesses and protuberances are formed. The specific recesses and protuberances are very effective for eliminating accidental transfer of a resinous layer, to be fixed on an article's surface, onto the heating surface. The thermal fixing apparatus is useful for electrophotography, electrostatic printing, powder-painting, powder-photogravure and powder-screen printing.

3,595,540
BALL HEATER-EQUILIBRATOR SYSTEM
John A. Whitcombe, Lakewood, Colo., assignor to The Oil Shale Corporation, New York, N.Y.
Filed Sept. 2, 1969, Ser. No. 870,378
Int. Cl. F28d 15/00
U.S. Cl. 263—19 B 3 Claims

A ball heater and ball temperature equilibrator system wherein the balls to be heated and the hot flue gas heating medium are cocurrently flowed through the ball heater to raise the temperature of the balls to varying higher ball temperatures and wherein the balls having varying higher ball temperatures have their temperature brought to substantial equilibrium by flowing, preferably cocurrently, the nonuniformly heated balls and flue gas from the ball heater through the ball temperature equilibration chamber having ball intermixing means therein.



3,595,541
METHOD AND APPARATUS FOR TREATING PARTICULATE SOLIDS IN A FLUIDIZED BED
Harold L. Pabich, Des Plaines, and Richard J. Wilson, Rosemont, both of, Ill., assignors to Nalco Chemical Company, Chicago, Ill.
Filed May 20, 1969, Ser. No. 826,206
Int. Cl. F26b 3/08, 17/10; F27b 15/00
U.S. Cl. 263—21 A 19 Claims



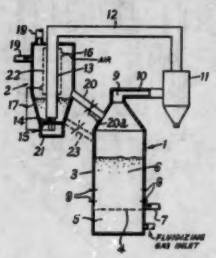
Method and apparatus for treating small size particulate solids in a fluidized bed, and the calcining of particulate magnesium carbonate and magnesium hydroxide, or a mixture thereof in a fluidized bed, wherein the apparatus may include an upstanding tubular member of substantially greater length than width defining a bed area or reaction vessel and means for heating the bed by driving heat through the walls of the tubular member, and including means coacting with the incoming fluidizing gas to enhance even fluidization.

3,595,542

PREHEATER USING DOWNWARDLY FLOWING, DIRECTLY CONTACTING, FLUIDIZING VAPORS FROM CALCINING STAGE OF CALCEROUS MATERIAL

Neville David Ashman, Borough Green, England, assignor to Fawkham Developments Limited, Kent, England

Filed Nov. 5, 1968, Ser. No. 773,437
Claims priority, application Great Britain, Nov. 6, 1967, 50350/67
Int. Cl. F27b *15/00*
U.S. Cl. 263—21 A 11 Claims



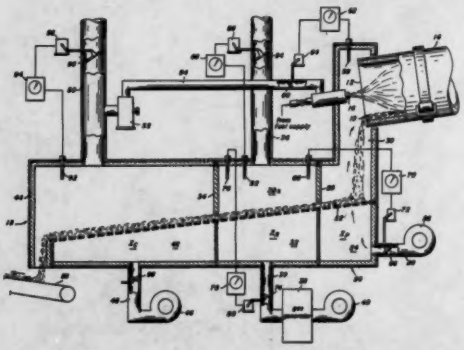
This invention relates to a method and apparatus for fluidizing particulate material with a dust-laden gas and to a method and apparatus for calcining granular material in which dust-laden products of combustion from a calciner are used to fluidize and preheat the granular material subsequently delivered to the calciner.

3,595,543

APPARATUS FOR AND METHOD OF TREATING AND COOLING CEMENT CLINKER

Stewart W. Tresouthick, McCandless Township, Allegheny County, Pa., assignor to United States Steel Corporation

Filed Jan. 8, 1970, Ser. No. 1,486
Int. Cl. F27b *7/06*
U.S. Cl. 263—32 R 30 Claims



This invention relates to an apparatus for and method of cooling and treating cement clinker discharged from a discharge end of a cement kiln, which kiln has a burner disposed adjacent the discharge end. The apparatus has a grate-type cooling means adapted to receive a bed of the cement clinker from the discharge end at a temperature of about 2,700° to 2,800° F. and to discharge the cement clinker at a temperature of about 350° F. The cooling means has a pressure zone for cooling the cement clinker from a temperature of about 2,500° to a temperature of about 1,850°. A first cooling means is disposed adjacent the pressure zone for directing a pressurized cooling fluid through the cooling means and through the bed to cool the cement clinker from a temperature of about 2,500° F. to a temperature of about 1,850° F. and also to heat the cooling fluid to a temperature of about 400° to about 500° F. for use as secondary air for the burner. The cooling means also has a reduction and cooling zone adjacent the pressure zone for cooling and treating the cement clinker from a temperature of about 1,850° F. to a temperature of about 1,100° F. Gas generator means in the reduction and cooling zone direct a pressurized reducing fluid through the cooling means and through the bed to cool the cement clinker from a temperature of about 1,850° F. to a temperature of about 1,100° F. and to exit the reducing fluid from the reduction and cooling zone. Additionally, the cooling means has a cooling zone adjacent the reduction and cooling zone for cooling the cement clinker from a temperature of about 1,100° F. to a temperature of about 350° F. A second cooling means adjacent the cooling zone directs a pressurized cooling fluid through the cooling means and through the bed to cool the cement clinker from about 1,100° F. to about 350° F. and to heat the cooling fluid to a temperature of about 230° to 250° F. for use as primary air for the burner.

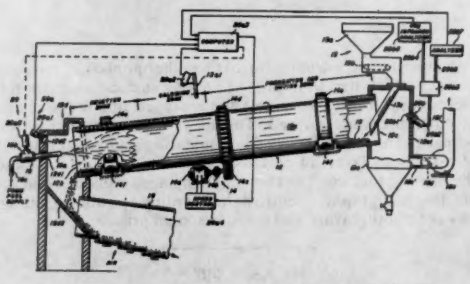
The method includes the steps of receiving a bed of the cement clinker on a grate-type cooling means from the discharge end at a temperature of about 2,700° to 2,800° F.; cooling the cement clinker in a pressure zone of the cooling means from a temperature of about 2,500° F. to a temperature of about 1,850° F. by directing a pressurized cooling fluid through the cooling means and through the bed to heat the cooling fluid to a temperature of about 400° to about 500° F. for use as secondary air for the burner; cooling the partially cooled cement clinker in a reduction and cooling zone adjacent the pressure zone of the cooling means from a temperature of about 1,850° F. to a temperature of about 1,100° F. by directing a pressurized reducing fluid through the cooling means and through the bed and to exit the reducing fluid from the reduction and cooling zone; and cooling the reduced cement clinker in a cooling zone adjacent the reduction and cooling zone from a temperature of about 1,100° F. to a temperature of about 350° F. by directing a pressurized cooling fluid through the cooling means and through the bed to heat the cooling fluid to a temperature of about 230° to 250° F. for use as primary air for the burner.

3,595,544

CONTROL SYSTEM FOR CEMENT KILN

George T. Curtis, and Marshal Hunt, Jr., both of Ross Township, Allegheny County, Pa., assignors to United States Steel Corporation

Filed July 15, 1969, Ser. No. 841,919
Int. Cl. F27b *7/00*
U.S. Cl. 263—32 7 Claims



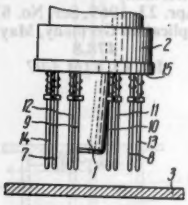
This invention relates to the combination of a rotary kiln for sintering raw material into sinter and having drive means connected to the rotary kiln for rotating the rotary kiln, heating means disposed adjacent one end of the rotary kiln for directing a heated fluid through the rotary kiln to sinter the raw material as the raw material passes through the rotary kiln from the other end of the rotary kiln to the one end of the rotary kiln, and control means associated with the rotary kiln for controlling the operation of one of the drive means and the heating means.

3,595,545

DEVICE FOR STABILIZING DISTANCE BETWEEN TOOL SECURED ON SUPPORT OF MACHINE, FOR EXAMPLE CUTTER OF GAS-CUTTING MACHINE, AND SURFACE OF BLANK

Valentin Mikhailovich Sitnichenko, ulitsa Odesskaya, 58/6, kv. 14; Alexandr Mikhailovich Zamuruev, ulitsa Tereshkovoi, 12, kv. 24, and Andrei Isakovich Kogut, ulitsa Pionerskaya, 20, kv. 12, all of Odessa, U.S.S.R.

Filed Oct. 16, 1969, Ser. No. 866,987
Int. Cl. B23k 7/00, 9/12; G06f 15/46
U.S. Cl. 266—23 M 2 Claims



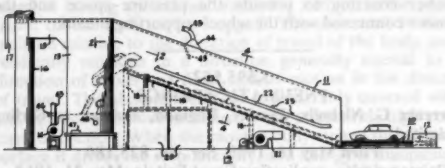
A device for stabilizing the distance between a tool secured on the support of a machine, for example, the cutter of a gas-cutting machine, and the surface of a blank, in which a detector determining the position of the tool has at least two pairs of indicators following the distance between the blank surface and a mark made on the surface of the tool or support of the machine and corresponding to each indicator, in which case the accuracy of machining the members is considerably increased.

3,595,546

APPARATUS FOR CONVERTING SCRAP AUTOMOBILE BODIES TO HIGH GRADE PIGS

Edward A. Uzdavines, 124 Moore St., Woodbury Heights, N.J.

Division of Ser. No. 540,876, Apr. 7, 1966, Pat. No. 3,484,231
Filed Oct. 30, 1969, Ser. No. 872,689
Int. Cl. C21b 5/00
U.S. Cl. 266—33 5 Claims



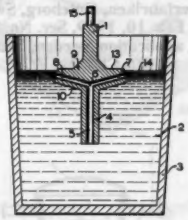
The apparatus includes an open bottomed upwardly angled conveyor contained within a thermally insulated housing, a cupola into which the conveyor discharges and high temperature jet burners for heating the interior of the housing. Ignited scrap automobile bodies are placed on the open bottomed conveyor which moves angularly upward through the thermally insulated housing within which all combustibles are consumed and low temperature melting metals melt and drop off by the time that each car reaches the upper end of the housing to be deposited thereafter into the cupola. The cars are melted down in the cupola to high grade steel which is tapped off and pigged. Incomplete combustion products produced in the housing in the form of smoke are drawn off and forced through the cupola bed to complete the combustion and eliminate air pollution.

3,595,547

DEVICE FOR PROMOTING METALLURGICAL REACTIONS

Hubert Polomsky, Duisburg-Buchholz, and Gerhard Eichbaum, Duisburg, both of, Germany, assignors to Demag A G, Duisburg, Germany

Filed Feb. 5, 1969, Ser. No. 796,729
Claims priority, application Germany, Feb. 23, 1968, P 15 83 877.4
Int. Cl. C21c 7/00
U.S. Cl. 266—34 A 7 Claims



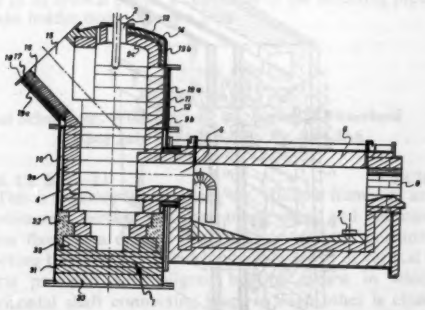
A device for accelerating the physical and chemical processes in metallurgical metallic melts or similar dense media of elevated temperatures includes a rotatable stirrer which is adapted to dip into the melt. In accordance with the invention, the stirrer includes a central suction pipe and a plurality of radially outwardly extending ejection ducts connected into the suction pipe at the upper end thereof. A feature of the construction is that the ejection ducts are defined in a disclike member which, at least on the side carrying the suction pipe, is formed as a smooth solid body of a refractory material and the suction pipe, is formed as a smooth solid body of a refractory material and the suction pipe is connected axially symmetrical thereto. In one embodiment, the underside of the solid body has a polygonal base in order to facilitate the stirring action on the melt. Ejection ducts advantageously terminate at the corners of the polygonal solid body. In some instances, it is also desirable to form the top side with projections or flat edges for entraining the melt and the slag and for aiding in its intermixing.

3,595,548

METALLURGICAL REFINING VESSEL

Claude Tsymbal, Metz, France, assignor to Institut De Recherches De La Siderurgie Francaise, Germain en Laye, France

Filed Aug. 22, 1969, Ser. No. 852,514
Claims priority, application France, Aug. 23, 1968, 164,094
Int. Cl. C21c 5/42
U.S. Cl. 266—34 10 Claims



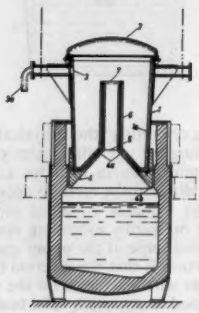
A refining vessel for top blowing of pig iron comprises a main lining consisting of a refractory material and having a

thermal conductivity of 2—6 k.cal./h.m.° C. The upper part of the main lining is surrounded by one or more envelopes of thermally insulating material having a thermal conductivity of less than 2 k.cal./h.m.° C. and the lower part of the main lining (namely, that part which surrounds the molten metal bath) is surrounded by a jacket for circulating water, air or other fluid coolant. The envelope prevents excessive cooling of the normally cooler upper part and the jacket prevents overheating of the normally hotter lower part of the vessel.

3,595,549
SLAG LADLE

Erik Axel Skold, Hallefors, Sweden, assignor to Aktiebolaget Svenska Kullaterfabriken, Goteborg, Sweden

Filed Feb. 10, 1969, Ser. No. 797,871
Claims priority, application Sweden, Feb. 9, 1968, 1707/68
Int. Cl. C21c *7/10*
U.S. Cl. 266—37 **5 Claims**

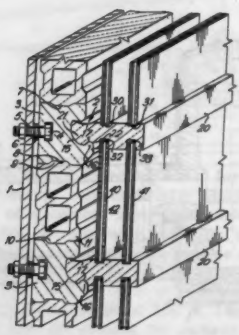


A slag ladle for a metallurgical furnace is formed in such a manner that its lower end essentially covers the area of the furnace at the level where it is expected to cooperate therewith and is provided with a concave bottom and a centrally located inlet to the receptacle, which is kept under vacuum.

3,595,550
FURNACE LININGS

Robert Greer, Whitchurch, Cardiff, Glamorgan, Wales, assignor to Coupe & Tidman Limited, Neston, Wirral, England

Filed Apr. 21, 1969, Ser. No. 817,899
Claims priority, application Great Britain, Apr. 25, 1969, 20,321/68
Int. Cl. C21b *7/06*
U.S. Cl. 266—43 **16 Claims**

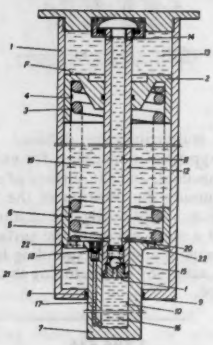


A furnace lining comprises two elongated support members transversely spaced apart and two sets of refractory tiles spaced apart with respect to the width of the support members so as to provide an airgap, the tiles of each set being releasably mounted between the support members, and extending longitudinally thereof in juxtaposed end-to-end relationship.

3,595,551
RESILIENT SUSPENSION SYSTEM FOR VEHICLES ADAPTED TO BE ARRANGED BETWEEN THE WHEEL SUPPORTING MEANS AND THE VEHICLE BODY FOR BALANCING THE HEIGHT OF THE VEHICLE BODY INDEPENDENTLY OF LOAD VARIATIONS ON THE VEHICLE

Johannes Ortheil, Anrath, Germany, assignor to Langen & Co., Dusseldorf, Germany

Filed Apr. 23, 1969, Ser. No. 818,630
Claims priority, application Germany, May 14, 1968, P 17 55 478.8
Int. Cl. F16f *3/07*
U.S. Cl. 267—64 **4 Claims**



A resilient suspension system for vehicles adapted to be arranged between the wheel-supporting means and the vehicle body for balancing or adjusting the height of the vehicle body independently of load variations on the vehicle in which there is provided a cylinder member, a piston member and a piston rod defining member, with said members coacting to provide pressure, storage, and pumping spaces respectively, one of said members being secured to the vehicle body and another of said members being secured to the wheel-supporting means and spring means being biased between the member coacting to provide the pressure space and the member connected with the wheel-supporting means.

3,595,552
PNEUMATIC SPRINGS

Lawrence G. Nicholls, Tyseley, England, assignor to Girling Limited

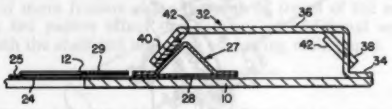
Filed May 16, 1969, Ser. No. 825,180
Claims priority, application Great Britain, May 21, 1968, 24,216/1968
Int. Cl. B60c *9/36*
U.S. Cl. 267—65 **5 Claims**

A pneumatic spring comprises a cylinder having a pressure seal at its outer end, a piston and a piston rod extending slidably and sealingly through the pressure seal, characterized in that the piston rod (6) has a portion (11) of reduced cross section which can, during manufacture of the spring, be aligned with the pressure seal (4) to define with the seal (4) a passage for the flow of gas into the cylinder (1).

This invention further comprises a method of charging a pneumatic spring including a cylinder, a piston and a piston rod extending slidably through a gastight pressure seal at the outer end of the cylinder, the piston rod having near its outer end a portion of reduced cross section, characterized by the steps of holding the piston rod and cylinder in relative positions in which the said reduced portion of the piston rod is aligned with the pressure seal to create a passage between

the rod and the seal without deflection of the seal, charging gas under pressure through the said passage into the cylinder, then moving the piston rod outwardly to allow the seal to engage and seal against the piston rod and then applying an end fitting to the piston rod to prevent inward movement of the rod sufficient for the reduced portion to be aligned again with the seal.

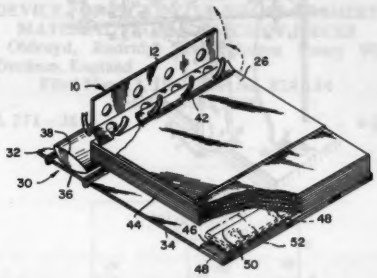
3,595,553
SHOCK-ABSORBING DETENT
Andrew W. Vincent, 65 Aberdeen St., Rochester, N.Y.
Filed Apr. 16, 1969, Ser. No. 816,535
Int. Cl. E05f *5/06;* **F16f** *7/00;* **G03b** *9/10*
U.S. Cl. 267—136 **2 Claims**



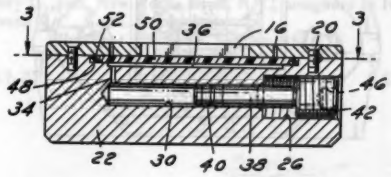
An electromagnetically actuated photographic shutter including an actuator having a relatively uniform output force characteristic, and a shock-absorbing stop consisting of a member having an inclined abutment surface in the path of travel of the body to be stopped. The abutment surface is inclined relative to the direction of travel of the body, and is resiliently movable in a direction generally normal to the direction of travel and fixed against motion in the direction of travel. The abutment surface is preferably covered with a pad of a compressible material having a relatively high coefficient of friction. When the moving body strikes the abutment surface it drives the stop laterally, and energy is dissipated by compression of the compressible material and friction. In the shutter, the blades are mounted on beams that are shaped to engage the stop.

3,595,554
TEMPLATE FOR USE IN IMPALING SHEET MATERIALS ON BINDING ELEMENTS OF LOOSELEAF BINDERS
Marion Donovan, Rock Point Road, Southport, Conn.
Filed Oct. 10, 1969, Ser. No. 865,377
Int. Cl. B25b *3/00*
U.S. Cl. 269—2 **4 Claims**

A combined template and holding device for use in punching a plurality of holes adjacent an edge of a sheet of paper to enable such sheet to be secured in a looseleaf binder. Device, made of stiff material such as fiberboard or plastic hinged along a fold line forming upper and lower panels to grip and align edge of sheet of paper, has registering holes in those panels spaced to fit onto binding elements such as posts or split rings. Gripped sheet of paper is punched by aligning registering holes with free ends of binding elements and forcing the latter through the portions of paper sheet exposed by holes in panels. In preferred form holes in upper panel completely circumscribe exposed portions and holes in lower panel have slots or passageways extending to edge of panel so that after upper panel is swung off ends of binding elements the device may be slipped off binding elements without disengaging paper sheet.



3,595,555
WORK HOLDER
Gordon N. Cameron, 1322 Hampton, Grosse Pointe Woods, Mich.
Filed May 9, 1969, Ser. No. 823,412
Int. Cl. B23q *3/08;* **B25b** *5/16*
U.S. Cl. 269—20 **7 Claims**

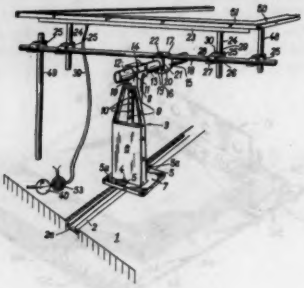


A hydraulically actuated expanding flat holder for workpieces, tools, and the like which includes a holder body member formed to include a pressurized chamber area which has a slotted flat plate thereover and a pressure-responsive pad in the chamber area and next adjacent thereto that will cause and maintain deflection of the slotted area of the plate, out of its normal plane, without loss of the actuating pressure in the holder body chamber area.

3,595,556
HOLDING DEVICE
Paul Schonauer, Wildenstrasse 15, Zurich, Switzerland
Filed July 25, 1969, Ser. No. 844,866
Int. Cl. B25b *11/00*
U.S. Cl. 269—21 **4 Claims**

This is a device for receiving e.g. window frames in an approximately vertical position, tilting them and maintaining them fixed in a desired horizontal or inclined position for working thereon. The device comprises a pair of vertical supports provided with aligned bearing means in which a horizontal shaft connecting them to each other is clamped for longitudinal and axial adjustment. On the shaft are in turn adjustably clamped two transverse beams each carrying an elongated suction member having in its upper face a recess connected to a suction pump. Each transverse beam further

had adjustably clamped thereon at one end an abutment tube extending beyond the upper surface of the respective suction



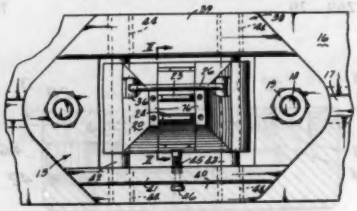
member, and at its opposite end a leg by which the transverse beam is rested on the floor when in a horizontal position.

3,595,557

WORKPIECE CLAMP ASSEMBLY

Dennis Daniels, Williamsville, N.Y., assignor to Houdaille Industries, Inc.

Division of Ser. No. 619,348, Feb. 28, 1967, Pat. No. 3,456,536
Filed Jan. 8, 1969, Ser. No. 789,893
Int. Cl. B23q *3/08*
U.S. Cl. 269—32 **6 Claims**



A machine tool has a workpiece-positioning mechanism including a carrier which is reciprocated in one axis to position the workpiece which is held by a clamp assembly. The clamp assembly is mounted on the carrier to be free to move vertically. The clamp assembly includes clamp members which move vertically to engage opposite sides of the workpiece, and which can draw the workpiece against a locating surface on the clamp assembly. The clamp assembly is arranged to be fluidly locked at a selected position along the length of the carrier, and an elongated tray is provided to support a flexible hose for powering the actuator portion and the fluid lock.

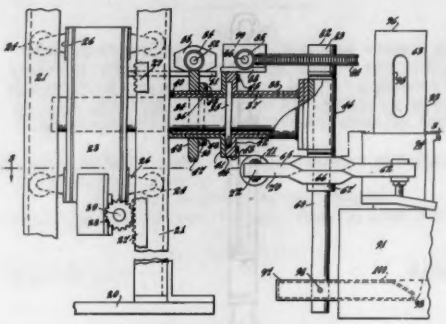
3,595,558

POSITIONER FOR OBJECTS

Franklin G. Fisher, and Luther L. Bollinger, Sr., both of Reading, Pa., assignors to Reading Company, Philadelphia, Pa.

Filed Dec. 23, 1968, Ser. No. 786,237
Int. Cl. B23q *1/20, 3/18*
U.S. Cl. 269—61 **6 Claims**

A positioner for objects such as car couplers undergoing repair welding which includes a vertically movable carriage, a longitudinal shaft and bearing supported on the carriage, the longitudinal bearing being adjustable angularly with respect to the carriage, a lateral bearing supported on the longitudinal bearing, a shaft journaled in the lateral bearing, the lateral bearing shaft being angularly adjustable with respect to the lateral bearing, and a clamp for the object mounted on the lateral bearing shaft. The clamp preferably includes scissors arms and a device to apply clamping pressure on the scissors arms. The scissors arms desirably are



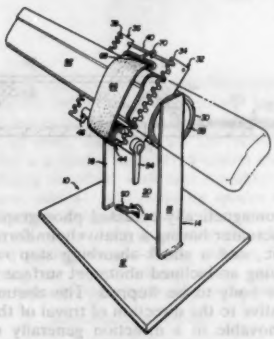
provided with pivoted jaws to engage the object. A safety bar extending from the lateral bearing shaft is desirably placed beneath the object.

3,595,559

ADJUSTABLE HOLDING DEVICE

John Francis Gettinger, 1500 N.W. 1st Ave., Fort Lauderdale, Fla.

Filed June 30, 1969, Ser. No. 837,380
Int. Cl. B23g *1/12*
U.S. Cl. 269—77 **7 Claims**



An adjustable holding device for holding automobile bumpers while work is being performed on them. The device includes a support base having a vertical component, and a rotatable cylinder horizontally mounted on the vertical component. At least two engaging elements for engagement with the edges of a bumper are mounted in parallel on the rotatable cylinder. Also included is a holding mechanism mounted on the engaging elements which is used for holding a bumper in position when it is engaged with the engaging elements, and a brake mechanism for holding the rotatable cylinder in a fixed position.

3,595,560

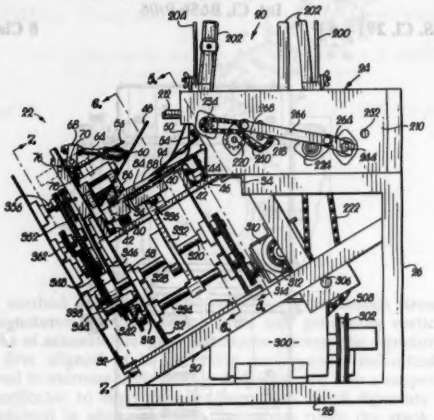
MECHANISM FOR INSERTING A NEWSPAPER SECTION INTO OTHER FOLDED SECTIONS

Warren W. Hannon, and Charles N. Hannon, both of P. O. Box 103, Olathe, Kans.

Filed June 18, 1969, Ser. No. 834,485
Int. Cl. B65h *5/30*
U.S. Cl. 270—57 **15 Claims**

An inserting machine for facilitating the assembly of multiple-section newspapers. The main newspapers, for example,

are successively fed onto a reciprocating tray provided with a side guide against which the fold of the paper rests. Upon delivery of each main paper to the tray, the latter dwells momentarily, during which time a friction wheel is shifted into engagement with the top face of the paper along an arcuate path of movement extending downwardly and toward the side guide. This causes the uppermost leaf or leaves of the paper to be pulled toward the side guide relative to the remaining leaves of the section to, in turn, raise the forward,



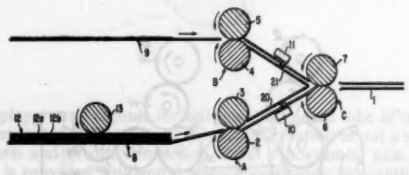
hard edge of the paper formed by such leaves. With the paper thus opened, the tray advances forwardly to place the raised edge on a stationary shelf, whereupon the paper is then fed from the tray and continues its advancement in the opened condition. The tray returns to its standby position and the action repeats as the next paper is fed into the tray. One or more feeders along the path of travel of the successively fed papers effect the delivery of additional sections beneath the shelf and into each advancing main paper.

3,595,561

METHOD OF AND MEANS FOR ENSURING ACCURATE REGISTRY AT HIGH SPEED OF AN ORIGINAL AND A COPY SHEET

Charles Modeste Leblant, Arque la Bataille, France, assignor to La Cellophane, Societe Anonyme, Paris, France

Filed Apr. 15, 1969, Ser. No. 816,317
Claims priority, application France, Apr. 19, 1968, 148595
Int. Cl. B65h *3/44, 5/26*
U.S. Cl. 271—9 **6 Claims**



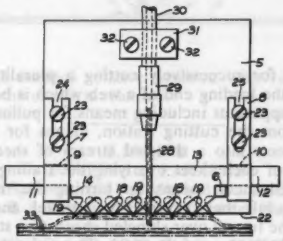
The present invention includes a method of and means for ensuring the accurate registry of an original and copy sheet upon their introduction into a copying machine. The copy sheet is first fed to a starting position by drive means and at the starting position the copy sheet actuates a microswitch. Actuation of this first microswitch disengages the drive means for the copy sheet and engages drive means for an original sheet. The original sheet is driven to a ready position where its driving force is disengaged upon the actuation of a second microswitch at the ready position. After a short time delay, the second microswitch permits engagement of a third driving means completely separate from the first and second driving means associated with the copy and original, the third driving means feeding the original and copy sheet in strict super imposition to the receiving portion of the copy machine.

3,595,562

DEVICE FOR PICKING UP PIECES OF SHEET MATERIAL FROM A STACK OF PIECES

David Oldroyd, Rodridge Hall, Hutton Henry Wingate, Co. Durham, England

Filed May 13, 1969, Ser. No. 824,154
Int. Cl. B65h *3/08*
U.S. Cl. 271—26 **6 Claims**



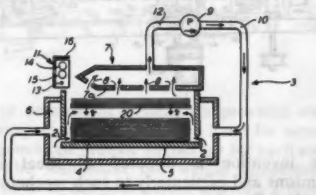
A device for picking up pieces of sheet material from a stack of such pieces which includes a tubular means for piercing a top piece of the sheet material of the stack and for introducing a gaseous medium between that top piece and the next lower piece, and cooperant gripping means for gripping the top piece and lifting same from the stack.

3,595,563

SHEET-FEEDING APPARATUS

Earl Rostoker, Brooklyn; Walter Engels, New York, and Henry G. Joel, New York, all of, N.Y., assignors to Ing. C. Olivetti & C., S.p.A., Ivrea, Italy

Filed Sept. 15, 1969, Ser. No. 857,776
Int. Cl. B65h *3/08*
U.S. Cl. 271—26 **5 Claims**

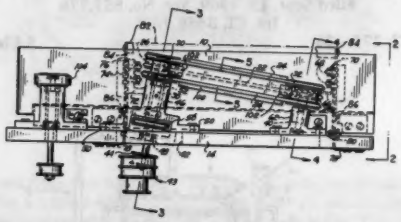


A sheet-feeding device is disclosed including a suction head adapted to hold a sheet of paper or the like presented thereto, and an adjacent sheet transfer means which periodically removes the sheet than being held by the said head and initiates transfer to a utilization point. Suction for the head is provided by the intake of an air pump. The outlet of the said pump is directed into a blower system which is arranged to move by airflow a portion of a stack of feed sheets to the suction head. The stacked sheets so moved are constrained so that they are moved to the head against gravity or other restoring forces. When the suction head contacts the closest of the moved sheets, that (single) sheet is held at the head for transfer. The held sheet, however, covers the head, thereby disrupting flow through the pump—and in particular stopping flow to the blower system connected to the pump outlet. Accordingly all sheets except the single sheet, are moved away from the head by the aforementioned restoring force, assuring that but a single sheet at a time is present for transfer.

3,595,564
APPARATUS FOR HANDLING SHEETS
Raymond J. De Young, Woodcliff Lake, N.J., assignor to North American Rockwell Corporation, Pittsburgh, Pa.
Filed May 15, 1968, Ser. No. 729,191
Int. Cl. B65h 5/24, 29/12
U.S. Cl. 271—46 21 Claims

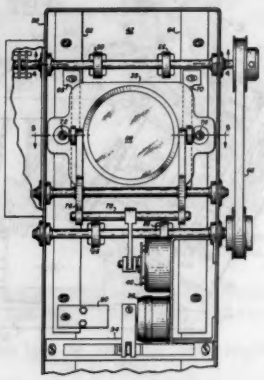
Apparatus for successively cutting a plurality of similar sheets from the leading end of a web which is being fed forwardly, the apparatus including means for pulling the sheets forwardly from the cutting station, means for forming the travelling sheets into a shingled stream of sheets with the leading end of each sheet overlying the trailing end of the previously fed sheet, means for turning the thus shingled sheets over while they continue their travel, and means for forwarding the turned over shingled sheets to a stacker which is fed from the bottom of the stack. The apparatus of the invention is so constructed that it can be readily adapted to the handling of sheets of different lengths.

3,595,565
SHEET ITEM TRANSPORT AND ALIGNING MECHANISM
Harry R. Bergland, Novi, Mich., assignor to Burroughs Corporation, Detroit, Mich.
Filed Aug. 21, 1969, Ser. No. 851,818
Int. Cl. B65h 9/16
U.S. Cl. 271—49 15 Claims



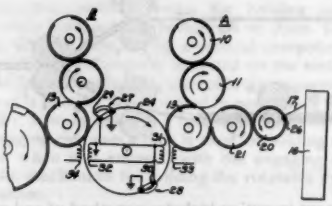
This invention is directed to sheet item transport mechanisms and particularly to such mechanisms for successively advancing sheet items, such as documents and the like, at high speeds in a given direction and at the same time laterally shifting the items to an edge guide for transport in precise alignment therewith for later attention in the transport path. More specifically, the transport mechanism of this invention employs endless carriers in the form of belts of rounded or circular cross section which engage opposite sides of a document in offset staggered relation to one another and in overlapping relation to the plane of the document with the result that the document is slightly corrugated longitudinally in the direction of its motion. The endless belts are mounted in parallel relation to one another on pulleys located on the outer sides of sideplates forming the transport path and such that the sections of the belts which engage the document project into the space between the sideplates in alternately staggered overlapping relation to one another. For the purpose of precise alignment of the documents in the transport path, the endless belts are inclined to an edge guide so as to drive the documents theretoward as they are advanced along the transport path. Other features of the invention include a provision for laterally separating the sideplates in order to gain access to the space therebetween and also a provision for continuously supporting the document engaging sections of the endless belts in the aforesaid staggered overlapping relation throughout the distance separating the pulleys about which the belts are trained.

3,595,566
AUTOMATIC APERTURE CARD TRANSPORT
Howard I. Jarmy, San Francisco, and Gary D. Oates, Los Gatos, both of, Calif., assignors to Singer-General Precision Inc., Binghamton, N.Y.
Filed Mar. 21, 1969, Ser. No. 809,352
Int. Cl. B65h 9/06
U.S. Cl. 271—53 8 Claims



The disclosed embodiment of the present invention is an aperture card transport which includes a card guide, a solenoid-actuated platen, a plurality of rollers for conveying the card through the guide, and a solenoid-actuated card stop. A pair of light sources and photosensitive diodes are positioned to sense the leading edge of the card. Logic circuitry responsive to the diodes controls the rollers, platen solenoid, and card stop solenoid to control the movement of the card through the guide.

3,595,567
SHEET DETECTION CONTROL FOR SHEET-HANDLING APPARATUS, PARTICULARY A PRINTING PRESS
William H. Lee, Chicago, Ill., and Alan W. Richards, Lyndhurst, Ohio, assignors to Harris-Intertype Corporation, Cleveland, Ohio
Filed Jan. 17, 1969, Ser. No. 792,093
Int. Cl. B65h 7/04
U.S. Cl. 271—57 13 Claims



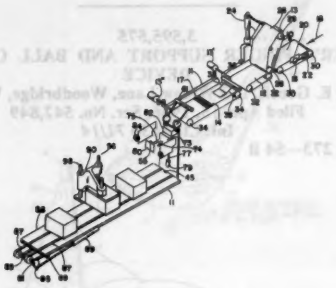
Control for sensing the absence of a sheet on a cylinder of a printing press. The cylinder carries a pair of coils which during certain portions of its rotation pass in close proximity to two interconnected stationary coils, one of which is connected to a DC power supply. If a sheet is absent at this time, the grippers on the cylinder ground one of the cylinder-mounted coils to cause a current to be induced in the other stationary coil to turn on an SCR and thereby cause a control relay to be energized.

3,595,568

JOGGER STACKER MACHINE

Mervin W. Roskam, Janesville, and Donald W. Hamil, Beloit, both of, Wis., assignors to Beloit Corporation, Beloit, Wis.

Filed May 21, 1969, Ser. No. 826,497
Int. Cl. B65h *31/34*
U.S. Cl. 271—89 11 Claims



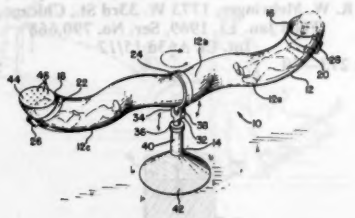
A method and machine or receiving a continuous stream of signatures from a printing press and producing vertical stacks of accurately aligned signatures wherein the signatures are first aligned in he direction conveyance, individually curved to increase their rigidity and projected into a supporting collector to align their leading edges. Each signature is maintained in alignment with the others while the stack is forming by means of continuous jogging and rotating brushes continuously depressing the side and back edges the uppermost signatures. The completed stack discharged to a compressor and binder.

3,595,569

ROUNDABOUT AND SEASAW PLAYGROUND CAPSULE

James C. Holte, 1601 East Republican, Apt. #16, Seattle, Wash.

Filed Mar. 13, 1969, Ser. No. 807,029
Int. Cl. A63g *1/32*
U.S. Cl. 272—30 10 Claims



A playground capsule including an elongated tube of transparent material centrally supported for rotation about a vertical axis and pivotal movement about a horizontal axis. The tube is provided with spiral undulations along its length and ground surface engaging spring or shock units at either end thereof.

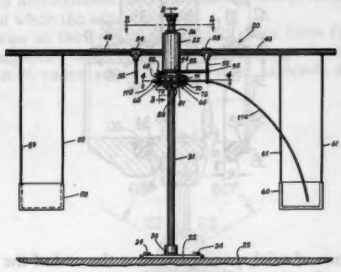
3,595,570

OCCUPANT-PROPELLED ROUNDABOUT SWING SET

Emmett M. Huff, 2834 North Hanley Road, St. Louis, Mo.; Bernard McNames, 1175 Verlene, Florissant, Mo., and Albert Ellegood, 5793 Hawkins Fuchs Road, St. Louis, Mo.

Filed Jan. 17, 1969, Ser. No. 792,082
Int. Cl. A63g *1/12*
U.S. Cl. 272—33 3 Claims

A swing rotatably supported by a vertical post. A clutch rotatable about the post with the swing and stopped against rotation when a cord connected to the clutch is pulled to rotate the swing relative to the clutch A spring returns the clutch to its original relative position with respect to the swing when the clutch is released.

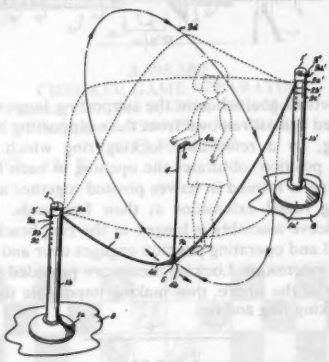


3,595,571

JUMPING APPARATUS

Raymond G. Spinnett, 1961-A Mitchell St., Santa Ana, Calif., and Freda P. Spinnett, 4635 East Cardwell St., Lynnewood, Calif.

Filed Oct. 29, 1969, Ser. No. 872,072
Int. Cl. A63b *5/20*
U.S. Cl. 272—75 8 Claims



An exercise or amusement apparatus is provided whereby a person can jump rope using only one hand for actuation. Two separate stanchions provide anchorage for each end of a primary line. The stanchions are weight adjustable and weight limited so as to fall over before allowing a person to be tripped by the primary line. The jumper holds one end of an actuating line which connects to a central part of the primary line and he is able to whirl the primary line around his body. A sleeve, connecting the actuating line to the primary line, has a greater bore than the line threading it so that kinks will not develop in the line and the jumper may move the position of the actuating line along the length of the primary line while continuing to actuate the line for jumping. Adjustable weight means are also provided for the actuating line for proper control of the swinging motion by an actuating party.

3,595,572

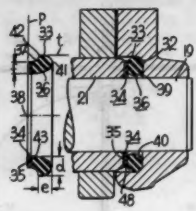
TRACK PIN AND BUSHING JOINT SEAL

Gerald L. Granda, Springfield, Ill., assignor to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.

Filed Feb. 13, 1970, Ser. No. 11,095
Int. Cl. F16j *15/00*
U.S. Cl. 277—92 5 Claims

A pin and bushing face-type seal for an endless track belt of the type used on crawler tractors designed with a figura-

tion producing effective sealing over a relatively wide range



of variations of axial spacing between the end of the bushing and the confronting track link sidebar.

3,595,573

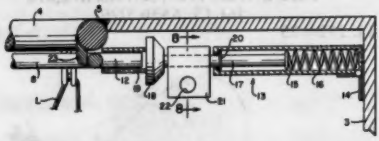
BASKETBALL GOAL WITH NET-LOCKING RING

Robert L. Kilbourne, Route 2, Box 213, Prince George, Va.

Filed Sept. 17, 1969, Ser. No. 858,786

Int. Cl. A63b *63/00*

U.S. Cl. 273—1.5 R **8 Claims**



A basketball goal wherein the supporting loops of the net are secured against removal from their supporting hooks on a main ring, by a removable locking ring which, when in operating position, obturates the opening in each hook. The locking ring is formed in halves pivoted together and having contacting radial extensions at their free ends. A spring-pressed sleeve assembly is hinged to the ring bracket and in assembled and operating position engages over and about the aforesaid extensions. Locking means are provided to prevent retraction of the sleeve, thus making impossible the removal of the locking ring and net.

3,595,574

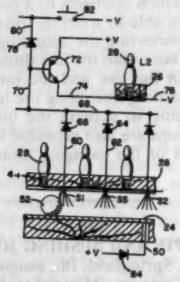
ELECTRIC BOWLING GAME

John L. Saffer, 4301 Mount Jeffers Ave., San Diego, Calif.

Filed Mar. 3, 1969, Ser. No. 803,845

Int. Cl. A63d *3/00*

U.S. Cl. 273—41 **5 Claims**



An electric bowling game wherein illuminated bowling pins are displayed in their normal triangular set arrangement in a spaced position above the alley and a conductive ball is moved down the alley to contact brush switch elements positioned below the illuminated pins and in substantially the same orientation, the contact with which extinguishes respective ones of the lighted pins in correlation with the path of the ball displaying the pins that are simulated as having been knocked down, all of which is accomplished through mechanical and circuit connections that do not have any moving parts.

3,595,575

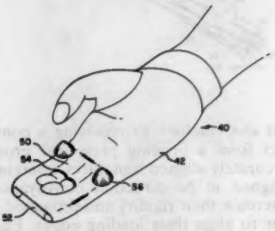
BOWLER'S FINGER SUPPORT AND BALL CONTROL DEVICE

William E. Gooch, 113 Willow Lane, Woodbridge, Va.

Filed Apr. 15, 1966, Ser. No. 542,849

Int. Cl. A63b *71/14*

U.S. Cl. 273—54 B **2 Claims**



This invention concerns bowling accessories, particularly finger supports and glove attachments which aid in the holding, controlling and releasing of bowling balls for improving performance. Supports for fingers inserted in bowling balls increase control and accuracy, avoid overtaxing hand and arm muscles, and augment gripping power of infirm persons. Knobs attached to the glove ensure proper grip to fully benefit from control provided by finger supports.

3,595,576

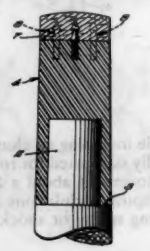
REPLACEABLE CUE TIP MOUNTING

Adolph T. Gunia, P.O. Box 20, Rt. 1, Antioch, Ill., and Andrew R. W. Mehringer, 1773 W. 33rd St., Chicago, Ill.

Filed Jan. 13, 1969, Ser. No. 790,668

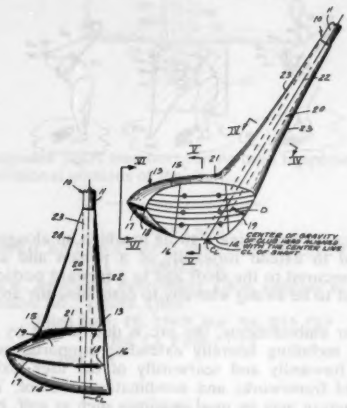
Int. Cl. A63d *15/12*

U.S. Cl. 273—70 **5 Claims**



A cue tip mounting for glueless attachment of a cue tip to the end of a cue stick, comprising a hollow ferrule adapted to receive the tip end of a cue stick, and provided with outwardly extending barbs constructed to be forced into the material of the cue tip, each barb having an enlarged head portion at its outer end terminating in a substantially knife edge, adapted to be interlocked with the material of such a cue tip, the barbs being symmetrically disposed in spaced relation with respect to the ferrule axis.

3,595,577
GOLF CLUB
William R. Hodge, 6620 Calumet Ave., Hammond, Ind.
Filed July 24, 1968, Ser. No. 747,242
Int. Cl. A63b 53/04
U.S. Cl. 273—80 C 1 Claim



A golf club with a shaft entering the head near the heel but with the center of gravity in line with the shaft, a striking face extending on both sides of the shaft and an airfoil contour around the shaft, all contributing to a neutral stick effect eliminating twisting of the club during swing and impact with the ball.

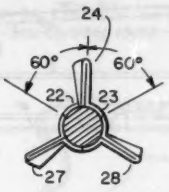
3,595,578
BOOMERANG SHAPED PROJECTILE AND ROPE TARGET THEREFOR
Michael J. Burcenski, 318 E. 12th St., Lockport, Ill.
Filed Feb. 2, 1970, Ser. No. 7,643
Int. Cl. A63b 67/06
U.S. Cl. 273—95 R 1 Claim

Members of generally boomerang shape but having outwardly extending hooks are adapted to be thrown by players at a spaced fixed target whereby, if properly aimed and thrown, the member will hook onto the target. The target includes a plurality of vertically extending lengths of rope supporting a plurality of vertically spaced balls.

3,595,579
ARROW SHAFTS WITH PLASTIC VANES AND METHODS OF FLETCHING
Alfred E. Benoit, 221 Whitney St., Northboro, Mass.
Filed Apr. 26, 1968, Ser. No. 724,430
Int. Cl. F41b 5/02
U.S. Cl. 273—106.5 C 11 Claims

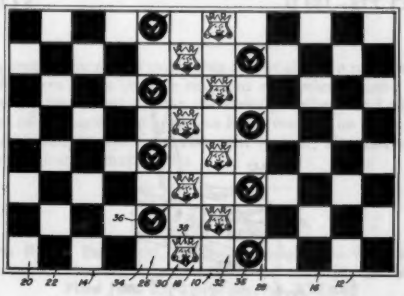
An archery arrow is equipped with vanes made from a sheet of adhesive backed plastic material, each vane being formed from a section of a sheet of adhesive backed plastic material which is folded, so that both sides of the fold are bonded together by the adhesive, except for strips at the ends thereof, by which the section is bonded to the arrow shaft, thereby providing vanes which are sufficiently flexible to bend and sufficiently resilient to return to shape after bending due to aerodynamic and mechanical forces normally encountered when the arrow is used.

The strips at the end of the folded sheet form flaps. The flaps of adjacent vanes are placed in abutting relationship so that when N vanes are used each vane subtends an arc of



360°/N about the periphery of the arrow shaft. The method of making and affixing the vanes includes the steps of cutting a section from a sheet of plastic material having an adhesive on one side, protected by a nonadhesing backing; removing the center portion of the backing to leave two edge strips; folding the section along the edges of the two strips to form flaps; folding the section along its centerline with the adhesive side in to form a double thickness vane; removing the remaining edge strips of backing and securing the vane to the arrow shaft.

3,595,580
CHECKER GAME APPARATUS
Edward P. Bucko, P.O. Box 5, Great Falls, Mont.
Filed May 1, 1969, Ser. No. 821,000
Int. Cl. A63f 3/02
U.S. Cl. 273—131 K 2 Claims

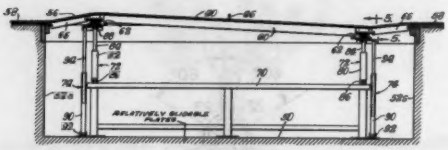


A checkerboard having at each end thereof diagonally arranged rows of white and black spaces so that each transverse and longitudinal row of spaces will have alternate black and white spaces thereon generally in the nature of a conventional checkerboard. Centrally of the board are four rows of spaces with the two outermost rows having specific indicia thereon and the outermost rows having different specific indicia thereon with the indicia in adjacent rows being staggered. Conventional distinguishably colored checker playing pieces are used for the end playing areas and crowned checkers are provided in the central two rows of the central area of the board, the lower parts of the checkers being of the same colors as the colors of the checkers used in the end areas, and the upper part of each checker being gold colored. By following prescribed rules of play, two or three players may employ the present invention.

3,595,581
GOLF GREEN

Robert I. Anderson, Muskegon, and Paul R. Hoffman, Farmington, both of, Mich., assignors to Brunswick Corporation

Filed Oct. 5, 1966, Ser. No. 584,397
Int. Cl. A63b 67/02
U.S. Cl. 273—176 H 19 Claims

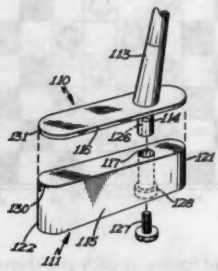


A contourable green for use in a golf game including a platform of sufficient rigidity to support one or more golfers and yet of sufficient flexibility to be distorted to a plurality of nonplanar forms. The platform includes an upper putting surface with a golf cup therein supported by two elongated flexible beams with a plurality of flexibly connected rigid crossbeams supported thereon. The beams comprise at least two abutting flexible plates adjacent a flexible walled partially restrained tube, whereby fluid pressure may be applied to the tube for rigidification of the beams. Apron members provide a pivotal connection between the platform supporting means and the floor. Included are at least two jacks secured to the underside of the platform at spaced locations for changing the contour thereof and stabilizers to prevent swaying movement of the platform. A selectively operable control for the jacks includes a cam surface with associated sensors whereby the jacks may be operated to distort the platform thereby providing a rolling, contoured putting surface.

3,595,582
GOLF PUTTER

Loyal H. Chapman, 1801 Flag Ave. South, Minneapolis, Minn.

Filed Feb. 19, 1969, Ser. No. 800,417
Int. Cl. A63b 69/36
U.S. Cl. 273—183 D 5 Claims



A golf putter including on the upper surface thereof a plate having a straight forward edge which is angled relative to the striking face. The plate may overhang and obscure the striking face and be adjustably secured to the head at various inclinations relative the striking face so that the striking face assumes predetermined open or closed attitudes relative the line of approach between the putter head and the hole when the formed edge of the plate is normal to the line of approach. The plate may be secured to the head by magnetic attraction or by threaded securing elements. Cooperating indexing marks may be provided on the putter head and plate to facilitate adjustments.

3,595,583
TRAINING DEVICE

Jess Oppenheimer, 549 Moreno Ave., Los Angeles, Calif.

Filed Sept. 3, 1968, Ser. No. 756,932
Int. Cl. A63b 69/36
U.S. Cl. 273—191 R 6 Claims

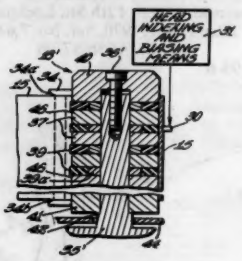
A device for practicing a swing in which an elongate shaft is secured to extend forwardly of a person and a guy is pivotally secured to the shaft and to a forward portion of an instrument to be swung whereby to determine the arc of said swing.

In other embodiments, the arc is determined by guiding elements including laterally extending supports, guy lines secured, forwardly and rearwardly of the user, extendible lines, rigid frameworks and combinations thereof. The disclose structure may be used in games such as golf, baseball, tennis, bowling and the like.

3,595,584
TRANSDUCER APPARATUS

Marvin Camras, Glencoe, Ill., assignor to IIT Research Institute, Chicago, Ill.

Division of Ser. No. 456,192, May 17, 1965, Pat. No. 3,449,528
Filed Feb. 7, 1969, Ser. No. 813,359
Int. Cl. G11b 5/00
U.S. Cl. 274—4 11 Claims



A video and/or audio magnetic transducer apparatus includes a capstan assembly formed with at least one annular groove therein and a compressible medium in the groove for nonrigidly backing a recording medium opposite a recording channel thereon. Adjustable stop means limit movement of a transducer head cooperable with the capstan when the head is in a cooperable operating position with respect to the recording medium for preventing damage thereto.

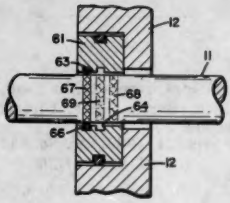
3,595,585
ROTARY SEAL ASSEMBLY

Barney C. Bristow, 233 Virginia Ave., San Mateo, Calif.

Filed Feb. 5, 1970, Ser. No. 8,972
Int. Cl. F16j 15/54
U.S. Cl. 277—58 10 Claims

Rotary seal assembly for forming a dynamic seal between a rotating shaft and a stationary housing. The assembly includes an insert member which carries an O-ring and is adapted to be mounted in the housing in a plurality of discrete positions. In each of these positions, the O-ring engages

a different portion of the shaft, thereby reducing the wear on the shaft and extending the life of the seal. A plurality of in-

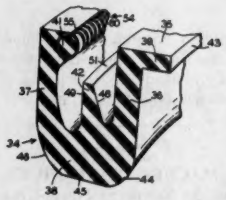


terchangeable insert members can be used to spread the wear over additional portions of the shaft.

3,595,586
LUBRICANT SEAL FOR MAKING CYLINDRICAL OBJECTS

William R. Anderson, Perrysburg, Ohio, assignor to Anderson Associates Inc., Toledo, Ohio

Filed Sept. 10, 1969, Ser. No. 856,583
Int. Cl. F16j *15/32*
U.S. Cl. 277—164 **9 Claims**

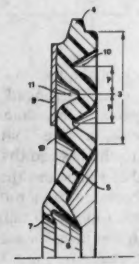


A seal between two relatively movable, telescopically interfitting cylindrical elements comprising a body of elastomer having a first flange embracing the outer surface of the inner element, a second flange embracing the outer surface of the outer element, and a helical spring having its convolutions closed upon itself and embedded in the elastomer in one of the flanges with the innermost portion of the convolutions exposed to engage the embraced cylindrical element. The seal has been applied to relatively rotating, right circular, cylinders such as the trunnions and bearing races of cardan-type universal joints as a grease seal and needle-bearing retainer.

3,595,587
PROTECTIVE SUPPORT FOR BALL BEARINGS

Dino Senigalliesi, Turin, Italy, assignor to RIV-SKF Officine di Villar Perosa S.p.A., Turin, Italy

Filed July 29, 1969, Ser. No. 845,828
Claims priority, application Italy, Aug. 7, 1968, 52751/A68
Int. Cl. B65d *53/00;* **F16c** *33/78*
U.S. Cl. 277—169 **4 Claims**

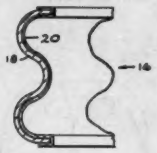


A protective support for a ball bearing comprises an annular resiliently pliable element which snaps into engagement with the outer bearing ring and which has at least one circular lip on its inner edge for contacting the cylindrical surface of the inner bearing ring. The annular element is provided with a central radially deformable part which accommodates thermal expansion and prevents deformation of the element.

3,595,588
STATIC SEAL WITH FOIL LAMINATE

John E. Rode, Ligonier, Pa., assignor to Temper Corporation, Ligonier, Pa.

Filed July 14, 1969, Ser. No. 841,352
Int. Cl. F16j *15/08*
U.S. Cl. 277—206 R **14 Claims**

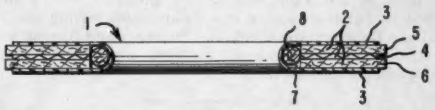


The invention pertains to a deformable metal seal having a base member imparting the shape and structural strength to the seal with a foil of softer material laminated with the body member to improve the sealing characteristics of the seal.

3,595,589
COMPOSITE GASKET

Thomas Knight Henderson, Beaumont, Tex., assignor to E.I. duPont de Nemours and Company, Wilmington, Del.

Filed Aug. 26, 1969, Ser. No. 853,153
Int. Cl. F16j *15/10*
U.S. Cl. 277—235 B **5 Claims**

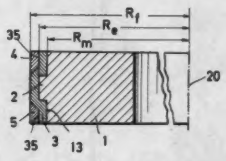


A composite gasket consisting essentially of a resilient core in the form of an annular ring and a seamless plastic jacket covering and closely fitting the inner periphery and adjacent faces of the core. The core can be formed by an outer annular ring and an inner annular split ring or, alternatively, by two equal semiannular rings.

3,595,590
PISTON RING

Horst Beyer, Burscheid, Germany, assignor to Goetzewerke Friedrich Goetze Aktiengesellschaft, Burscheid, Germany

Filed June 23, 1969, Ser. No. 835,645
Claims priority, application Germany, June 21, 1968, P 17 51 573.0
Int. Cl. F16j *9/00*
U.S. Cl. 277—235 R **9 Claims**



The outer surface of a support ring is first provided with a protrusion, for example by grinding down protrusion-ad-

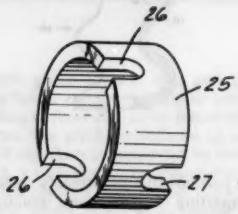
jacent parts of the surface. Then the entire outer surface is coated with a hard chrome layer of substantially uniform thickness. Finally, depressions in the chrome are filled with molybdenum. The sliding-friction resistant properties of molybdenum are thus combined with the wear-resistant properties of chromium into a mechanical unit capable of withstanding rough usage.

3,595,591

FLOATING TOOL HOLDER

Roland G. Koch, and Earl D. Brechtelsbauer, both of Frankenmuth, Mich., assignors to Houdaille Industries Inc., Buffalo, N.Y.

Filed Jan. 22, 1969, Ser. No. 793,073
Int. Cl. B23b *31/08*
U.S. Cl. 279—16 **8 Claims**



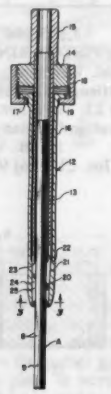
Nonrigid connection between the shank and nose portion of a toolholder for compensating for misalignment in parallelism between a workpiece and the toolholder. The shank and nose are connected by means of an annular driver having two pairs of diametrally opposed slots displaced 90° from one another, two pairs of dowel pins fixed to the shank and the nose, and two pair of rolls journaled on the dowel pins and engageable with the slots of the annular driver. The annular driver has a small amount of radial clearance with the shank and nose of the toolholder and is enclosed with a small amount of radial clearance in a hollow body having one end fixed to a flange on the shank and the other end flanged so as to radially overlap a flange on the nose, whereby the nose is retained in position on the shank.

3,595,592

TOOLHOLDERS

Theodore R. Wagner, 257 Lansing St., Aurora, Colo.

Filed Feb. 5, 1969, Ser. No. 796,717
Int. Cl. B25g *3/24*
U.S. Cl. 279—47 **4 Claims**



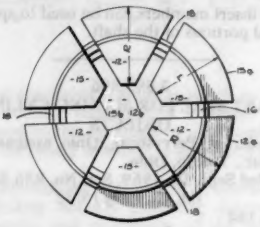
This toolholder has a specially designed collet in which the different shaped generally hexagonal, shanks of two different tools, like an Allen wrench and a Bristol wrench, for example, can be mounted interchangeably for endwise adjustability.

3,595,593

COLLETS

Derek Lawrence Gold, Cirencester, England, assignor to Gib Precision Limited, Barton Lane, Cirencester County of Gloucester, England

Filed Sept. 24, 1969, Ser. No. 860,697
Int. Cl. B23b *31/20*
U.S. Cl. 279—57 **3 Claims**



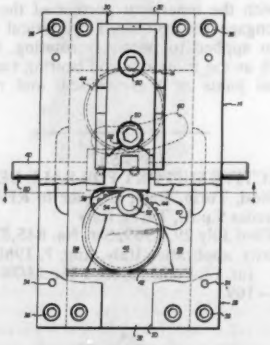
A collet for use in gripping bars in machine tool operations, in which the bar-gripping jaws are spaced apart by spacing elements, themselves constructed as jaws applicable to the next largest size bar to be gripped.

3,595,594

MACHINE TOOL CHUCK

Orvil R. Aronson, 34 Newberry Place, Grosse Pointe Farms, Mich.

Filed Oct. 23, 1969, Ser. No. 868,822
Int. Cl. B25b *1/06*
U.S. Cl. 279—117 **8 Claims**



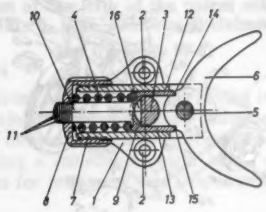
A machine tool chuck of the two-jaw universal type which incorporates floating gears arranged between fixed and movable racks to reciprocate the chuck jaws to and from a workpiece clamping position. The floating gears are respectively drive connected to the jaws so that when an input force is applied to the movable racks and the clamping position is approached, the ratio between the input force and the output clamping force increases rapidly so that a substantial clamping force is imposed on the jaws for maintaining them in the clamping position. The clamping load is not imposed directly on the floating gears, but rather is transmitted directly to the massive chuck base. Clamping and unclamping motors provide the input forces for moving the jaws to and from the clamping position.

3,595,595

TOE IRON SAFETY SKI BINDINGS

Ludwig Axthammer, Schweinfurt, Germany, assignor to Hannes Marker, Garmisch-Partenkirchen, Germany

Filed Sept. 24, 1968, Ser. No. 761,972
Claims priority, application Germany, Oct. 2, 1967, P 15 78 859.4
Int. Cl. A63c 9/85
U.S. Cl. 280—11.35 T 7 Claims



A soleholder carrier is mounted on a toe iron member that is fixed to the ski. The soleholder carrier is mounted on said toe iron member for rotation about a vertical pivot pin against the force of a helical compression spring and forms a stop, which is engageable by the toe portion of the boot and is so shaped that the boot will not be moved in the longitudinal direction of the ski, or will be moved only to a negligible extent in said direction, before the toe iron has reached its released position. The helicaL compression spring is mounted in a horizontal recess of the soleholder carrier and bears at one end on the carrier by means of an adjustable stop. The spring acts at the other end by means of a piston on a flat formed on the pivot pin. The piston is formed with a vertical recess at its end facing the pivot pin. The width of said vertical recess is smaller than the width of the flat formed on the pivot pin.

3,595,596

SAFETY SKI POLES PROVIDED WITH SNOWHEADS

Franz Xaver Bruckl, Krottenkopfstrasse 50, 8116 Eschenlohe, Germany

Filed Aug. 12, 1968, Ser. No. 751,956
Claims priority, application Germany, Aug. 17, 1967, P 15 78 728.7
Int. Cl. A63c 11/24
U.S. Cl. 280—11.37 Z 4 Claims

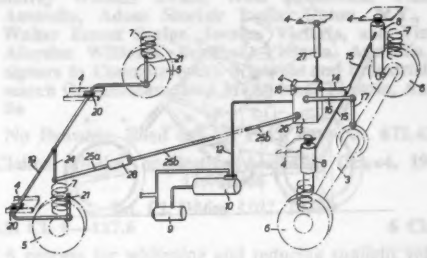
A pair of ski pole snowheads with one snowhead having a bore between the center and the outer edge of the snowhead with the other snowhead having elongated aperture extending inwardly from the outer edge of the snowhead. The diameter of the bore and the inside width of the aperture match the diameter of the ski pole tube adjacent to the snowhead.

3,595,597

VEHICLE LEVELLING SYSTEMS

Graham J. Wenham, Brimingham, England, assignor to Girling Limited

Filed June 4, 1969, Ser. No. 830,465
Claims priority, application Great Britain, June 5, 1968, 26,786/68
Int. Cl. B60g 11/26
U.S. Cl. 280—124 5 Claims



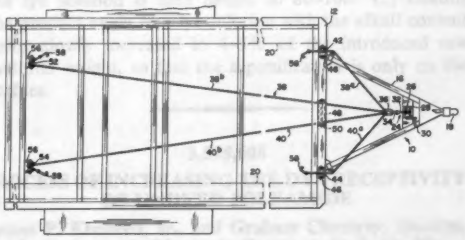
A vehicle suspension system of the kind in which the sprung mass of the vehicle is yieldably supported from road wheels adjacent the two ends of the vehicle and the support means associated with the road wheels adjacent one end include a fluid-pressure support device, the fluid pressure in that device being controlled automatically to compensate for variations in the loading of the vehicle by a levelling valve which is responsive to variations in the height of the sprung mass adjacent said one end of the vehicle; the position of the datum level from which the levelling valve measures the height of the unsprung mass is automatically adjusted in accordance with variations in the height of the sprung mass of the vehicle adjacent the other end thereof; the sprung mass of the vehicle can thus be kept level fore and aft.

3,595,598

TRAILER WITH UNITARY TIEDOWN CONTROL

John N. Nuzum, Barberton, Ohio, assignor to Travel-Safe Trailer Mfg. Inc., Akron, Ohio

Filed Aug. 11, 1969, Ser. No. 849,058
Int. Cl. B60p 7/00
U.S. Cl. 280—179 A 3 Claims



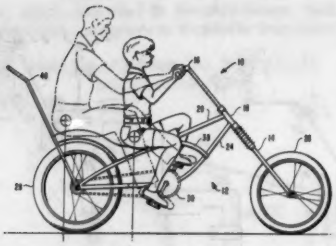
The trailer is adapted for vehicle transport and has a winch means on the frame for controlling windup of a control cable on the winch, an attachment means being secured to said cable, and a pair of control cables are threaded through or adjustably engaged with the attachment means. Guide means for the control cables guide opposite ends thereof to longitudinally spaced portions of the trailer to be adjacent end portions of a vehicle thereon, and engaging members are secured to each end of the control cables for engaging a vehicle and securing it to the trailer by a unitary tightening action on the control cables by takeup on the winch means.

3,595,599

BICYCLE TO ACCOMODATE DIFFERENT SIZE RIDERS

Michael Gale Black, 8401 Wheatland, Sun Valley, Calif.

Filed Apr. 1, 1969, Ser. No. 812,090
Int. Cl. B62k 3/02
U.S. Cl. 280—282 4 Claims



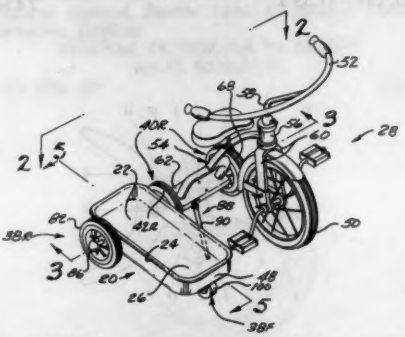
The bicycle is characterized by an inclined front wheel fork and handle bar. The frame of the bicycle inclines downwardly from the front wheel fork toward the rear wheel. An elongated seat is fitted over the downwardly inclining frame and extends backwards rising arcuately over the rear wheel. In this way the seat has a double function in that the arcuate bottom surface of the seat over the rear wheel serves as a fender as well as a seat. With this arrangement, when smaller children ride the bicycle, they sit on the portion of the seat directly over the peddle. In this position the rearwardly inclined front wheel fork and handle bar puts the handle bar in close proximity to the arms of the child. Larger persons sit on the arcuate portion of the seat over the rear wheel and they are either directly over or slightly in back of the axis of the rear wheel to permit the rider to cause the front wheel of the bicycle to rise up by merely shifting his weight to the rear as he rides the bicycle.

3,595,600

AXLE EXTENSION APPARATUS FOR WHEELED VEHICLE APPARATUS

Gerald K. Stevens, c/o P. O. Box 18948, Los Angeles, Calif.

Filed Oct. 4, 1968, Ser. No. 765,257
Int. Cl. B62k 27/00
U.S. Cl. 280—203 13 Claims



The specification discloses axle extension apparatus for wheeled vehicle apparatus which, in one preferred form, may comprise a main wheeled vehicle and an auxiliary wheeled vehicle adapted to be attached so as to have a main axle of the main vehicle transversely substantially coaxially aligned with an extension axle of an auxiliary vehicle for simultaneous rolling movement and in a manner which is substantially rigid in a horizontal plane but provides vertical flexibility so as to allow the two-wheeled vehicles to have a limited extent of relative vertical pivotal movement with respect to each other as they simultaneously ride along an elevationally irregular terrain. In one preferred form, the main vehicle may comprise a tricycle and the auxiliary vehicle may comprise a tricycle sidecar, and connection and coupling frame means may also be provided connecting same together in a manner providing rigidity in a horizontal plane but limited vertical flexibility for the above-mentioned purposes. The apparatus is such a to make it possible to attach such an extension axle and tricycle sidecar to any tricycle either at the time of manufacture or subsequently.

CHEMICAL

3,595,601

DYE ADDITIVE FOR CELLULOSE ESTERS

Charles L. Smart, Millington, N.J., assignor to Celanese Corporation, New York, N.Y.

Continuation-in-part of application Ser. No. 526,005, Dec. 28, 1965, now Patent No. 3,454,349, dated July 8, 1969. This application Mar. 4, 1968, Ser. No. 710,354

The portion of the term of the patent subsequent to July 8, 1986, has been disclaimed

Int. Cl. D06p *3/42*

U.S. Cl. 8—4 15 Claims

Shaped articles of cellulose esters having improved dyeability and printability comprising a cellulose ester having incorporated therein a minor proportion of a vinyl acetate polymer having a molecular weight below about 15,000 and a process for producing said shaped articles.

3,595,602

NOVEL FIBER REACTIVE ULTRAVIOLET LIGHT ABSORBERS AND THEIR USE IN CELLULOSE TEXTILE MATERIALS

John Christian Oppelt, Manville, Frederic Houghton Megson, Martinsville, and Michael Thomas Beachem, Somerset, N.J., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Original application Mar. 13, 1967, Ser. No. 622,396, now Patent No. 3,535,318, dated Oct. 20, 1970. Divided and this application Apr. 6, 1970, Ser. No. 31,053

Int. Cl. D06m *13/34, 13/30;* D06p *5/08*

U.S. Cl. 8—74 6 Claims

This invention relates to new mono-aromatic-penta-alkyl ethers of hexamethylolmelamine and to their use in imparting crease-resistance to cellulosic textile materials. The new ethers of hexamethylolmelamine impart crease-resistance to cellulosic textile materials without any adverse effect on the light-fastness of such materials that have been dyed with direct dyes.

3,595,603

PROCESS FOR THE SIMULTANEOUS DESIZING, SCOURING AND BLEACHING OF FABRICS

Giuseppe Cerana, Busto Arsizio, Italy, assignor to Roberto Cerana S.p.A., Busto Arsizio Varese, Italy

No Drawing. Continuation-in-part of application Ser. No. 496,586, Oct. 15, 1965, now Patent No. 3,377,131.

This application Feb. 12, 1968, Ser. No. 704,542

Claims priority, application Italy, Feb. 27, 1967, 13,085/67

Int. Cl. D06l *3/02*

U.S. Cl. 8—111 1 Claim

In a method for simultaneously desizing, scouring and bleaching fabrics containing cotton fibers of the kind wherein the fabric is first impregnated at room temperature with an aqueous hydrogen peroxide containing solution and is subsequently treated with saturated steam, with hot water and with a mixture of hot water and steam, the invention proposes that the aqueous solution contain 2.5 to 8.5% by weight of hydrogen peroxide, as 35% aqueous solution, and 0.2 to 5% by weight of caustic soda of 36° Bé.

3,595,604

PROCESSES FOR WHITENING AND RETARDING SUNLIGHT YELLOWING OF PROTEIN FIBERS BY TREATMENT WITH A FLUORESCENT BRIGHTENING AGENT, THIOUREA, AND A SOURCE OF FORMALDEHYDE

Geoffrey William Evans, West Brunswick, Victoria, Australia, Adam Sinclair Inglis, Upton, N.Y., and Walter Ernest Savige, Jacana, Victoria, and Vincent Aloysius Williams, Belmont, Victoria, Australia, assignors to Commonwealth Scientific and Industrial Research Organization, East Melbourne, Victoria, Australia

No Drawing. Filed Oct. 3, 1967, Ser. No. 672,433

Claims priority, application Australia, Oct. 4, 1966, 12,008/66

Int. Cl. D06m *3/02, 13/00*

U.S. Cl. 8—127.6 6 Claims

A process for whitening and reducing sunlight yellowing of wool, silk, and other protein fibers in which the fibers are treated with an aqueous solution containing a fluorescent brightening agent and subsequently treated with aqueous solutions of thiourea and a source of formaldehyde. The process may be combined with known bleaching, shrinkproofing, dyeing, and other textile fiber treatments.

3,595,605

PROCESS OF SURFACE SAPONIFYING CELLULOSE-2½-ACETATE, AND FABRIC MADE THEREFROM

Emil Kimmig, Freiburg im Breisgau, Germany, assignor to Deutsche Rhodiaceta AG, Freiburg im Breisgau, Germany

No Drawing. Filed Aug. 30, 1967, Ser. No. 664,291

Int. Cl. D06m *1/06*

U.S. Cl. 8—130 4 Claims

Cellulose-2½-acetate textile or knitted fabrics are made by wetting the raw materials; treating them at room temperature at a bath ratio of between 1:3 to 1:10 in a lye solution with slowly rising alkali content which is first raised up to only 2% of the material weight introduced. the lye solution is then heated to 80–100° C.; treating the product again in a lye solution with the alkali content being slowly increased to 4–5% of the introduced raw material weight, so that the saponification is only on the surface.

3,595,606

PROCESS OF INCREASING THE DYE RECEPTIVITY OF UNDYED POLYAMIDE

James P. Kimbrell, Jr., and Graham Chantrey, Decatur, Ala., assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Filed May 1, 1967, Ser. No. 634,831

Int. Cl. D06m *3/30*

U.S. Cl. 8—130.1 8 Claims

A process of improving the dye receptivity of an undyed textile produced from a fiber-forming synthetic linear polycarbonamide having recurring amide groups as integral parts of the main polymer chain comprising contacting at a temperature of at least about 25° C. and for at least about one minute the article with a solution consisting essentially of a compound selected from pyridine and substituted pyridines and water at a weight ratio

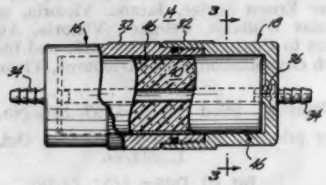
of from about 95:5 to about 5:95, respectively, and then removing the pyridine or substituted pyridine compound from the article.

3,595,607

APPARATUS FOR ODORIZING AN AIRSTREAM

Kenneth W. Gores, Bellevue, Wash., assignor to Kirkman Laboratories, Inc., Portland, Oreg.

Filed Jan. 21, 1969, Ser. No. 792,374
Int. Cl. A61l *9/04, 9/00*
U.S. Cl. 21—74 **3 Claims**



Apparatus is provided for imparting an agreeable odor to an airstream for the purpose of masking or neutralizing disagreeable odors that may be present or encountered. The apparatus comprises a casing consisting of two mating parts removably joined at the midpoint of the casing and having hollow stems at opposite ends thereof to permit operative coupling of the casing in a flexible air-handling conduit. Disposed within the casing is a porous body of cellular material substantially filling the casing and having a longitudinal air passage aligned with the hollow stems. Instanding bosses mounted on the casing interior orient the longitudinal passage into alignment with adit and exit openings formed by the hollow stems.

3,595,608

METHOD OF INCREASING RATE OF DISSOLUTION OF ALUMINUM IN ACID CHLORIDE SOLUTIONS

Michael J. Pryor, Woodbridge, Conn., assignor to Olin Mathieson Chemical Corporation

No Drawing. Original application July 26, 1967, Ser. No. 655,997. Divided and this application Feb. 2, 1970, Ser. No. 12,491
Int. Cl. C01f *7/56*
U.S. Cl. 23—92 **3 Claims**

A method of increasing the rate of dissolution of aluminum in acid chloride solutions which comprises the steps of alloying the aluminum with from 0.04 to 0.5% of tin and then immersing the resultant alloy into the acid solution.

3,595,609

CYCLIC PROCESS FOR PRODUCING POTASSIUM NITRATE AND AMMONIUM CHLORIDE

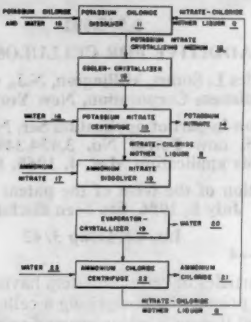
Leland J. Beckham, Lutz, Fla., assignor to Allied Chemical Corporation, New York, N.Y.

Filed Oct. 13, 1969, Ser. No. 865,808
Int. Cl. C01c *1/16;* **C01d** *9/10, 9/16*
U.S. Cl. 23—100 **10 Claims**

Potassium chloride and water are added to a first aqueous nitrate-chloride mother liquor having a

$$K^+/(K^+ + NH_4^+)$$

mol ratio of not more than about 0.37 to form a potassium nitrate crystallization medium. The medium is cooled to precipitate crystalline potassium nitrate and form a second nitrate-chloride mother liquor. After separation of the potassium nitrate, ammonium nitrate is added to the second mother liquor, all added water is evaporated to form an ammonium chloride crystallization medium, and ammonium chloride is crystallized at a temperature higher than the potassium nitrate crystallization. The ammonium chloride is separated, and the residual mother liquor is recycled to receive additional potassium chloride and water. The maintenance of a net balance of components permits continuous operation of a cyclic metathesis operation.



3,595,610

MANUFACTURE OF AMMONIUM PHOSPHATES

Fred H. Brinkman and Robert E. Williams, Houston, Tex., assignors to Esso Production Research Company

Filed Nov. 14, 1968, Ser. No. 775,619
Int. Cl. C01b *25/28*
U.S. Cl. 23—107 **10 Claims**

A process for the manufacture of an ammonium phosphate fertilizer wherein gypsum, phosphogypsum, anhydrite or a similar calcium sulfate is reacted with ammonium carbonate or ammonia and carbon dioxide to produce ammonium sulfate; the ammonium sulfate is contacted with a hydrogen ion exchange resin to form sulfuric acid which in turn is reacted with phosphate rock or the like to produce phosphoric acid; and this phosphoric acid is then used for regeneration of the ion exchange resin and the formation of ammonuim phosphate.

3,595,611

CATION AND THERMAL STABILIZATION OF FAUJASITE-TYPE ZEOLITES

Carl Vance McDaniel, Laurel, Richard William Baker, Ellicott City, and Clark Ace Rundell, Silver Spring, Md., assignors to W. R. Grace & Co., New York, N.Y.

No Drawing. Filed Feb. 3, 1969, Ser. No. 796,215
Int. Cl. C01b *33/28*
U.S. Cl. 23—111 **5 Claims**

A process for preparing a faujasite type zeolite having a silica to alumina ratio of at least 3.2 by treatnig the faujasite with a combination ammonium ion exchange and metal cation exchange including rare earth to reduce the Na_2O level in the product to below 3% followed by thermal stabilization and a subsequent ammonium ion exchange. The resulting zeolite is characterized by high thermal stability and high catalytic activity and selectivity, particularly as a component in a hydrocarbon cracking catalyst.

3,595,612

PROCESS FOR PREPARING CHLORINE-FREE NITRIC ACID SOLUTIONS

Alfred Schmidt, Wolfgang Gauster, and Ferdinand Weinrotter, Linz (Danube), Walter Müller, Leonding, near Linz, and Günther Raab, Steyr, Austria, assignors to Osterreichische Stickstoffwerke AG, Linz, Austria

No Drawing. Filed Apr. 1, 1968, Ser. No. 717,964
Claims priority, application Austria, June 15, 1967, A 5,556/67
Int. Cl. C01b *21/46*
U.S. Cl. 23—157A **6 Claims**

Removal of practically all the chlorine content from nitric acid solutions by adding a small quantity of di-

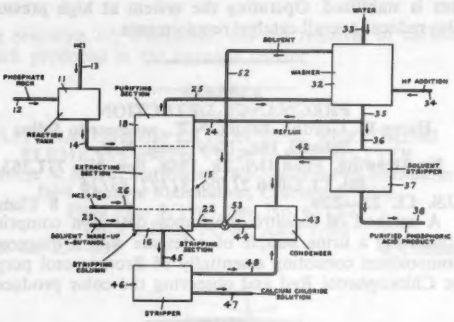
nitrogen tetroxide after the bulk of the nitrosyl chloride has been driven off. Thus, severe corrosion problems are avoided.

3,595,613

PRODUCTION OF PHOSPHORIC ACID

William C. Klingelhoefer, Hopewell, Va., assignor to Allied Chemical Corporation, New York, N.Y.

Filed July 1, 1968, Ser. No. 741,706
Int. Cl. B01d *11/04*; C01b *25/18, 25/22*
U.S. Cl. 23—165 2 Claims



Recovering phosphoric acid from a reaction mixture produced by reacting hydrochloric acid with phosphate rock by mixing the reaction mixture with a lower aliphatic alcohol to form a first aqueous layer and a first organic layer which contains the phosphoric acid. The layers are separated and a water-soluble fluoride compound is added to the first organic layer. The organic layer is then washed with water to form a second aqueous layer and a second organic layer and the aqueous layer which contains the phosphoric acid is separated out.

3,595,614

AMALGAM DECOMPOSITION

James M. Ford, Richard W. Ralston, and Walter J. Sakowski, Cleveland, Tenn., assignors to Olin Corporation

No Drawing. Filed Nov. 21, 1969, Ser. No. 878,927
Int. Cl. B01j *11/06, 11/22*; C01d *1/00*
U.S. Cl. 23—184 15 Claims

A method of decomposing an alkali metal amalgam by contacting it with water and graphite balls having a portion of their surface coated with an underlying ferrous metal and an overlying non-ferrous, amalgam-resistant metal. The decomposition reaction produces hydrogen, an alkali metal hydroxide with a concentration above 50% by weight, and mercury in which the sodium content is reduced to less than 0.01 percent.

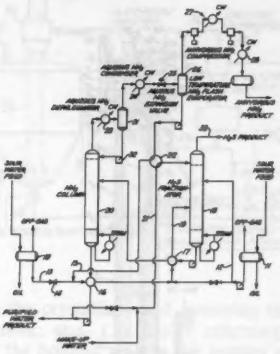
3,595,615

RECOVERY OF HIGH PURITY AMMONIA AND HYDROGEN SULFIDE FROM AMMONIUM SULFIDES

Nicholas E. Kaparakos, Pittsburgh, Pa., assignor to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Mar. 26, 1969, Ser. No. 810,689
Int. Cl. C01b *17/16*; C01c *1/00*
U.S. Cl. 23—193 13 Claims

Process effluent solutions comprising aqueous hydrogen sulfide and ammonia are treated to recover the ammonia essentially free of hydrogen sulfide impurity. Hydrogen sulfide is first stripped from the solution and recovered essentially free of ammonia. Ammonia is then stripped from the aqua ammonia bottoms of the hydrogen sulfide stripping operation and is removed as an overhead stream together with water vapor and some hydrogen sulfide impurity. The overhead stream is first cooled somewhat to condense a portion of its water vapor content which returns to the ammonia distillation as reflux. The remainder of the overhead stream is then further cooled to effect total condensation and to react



substantially all the hydrogen sulfide impurity with ammonia to form NH_4SH or $(NH_4)_2S$ salts, followed by flash vaporization with accompanying autorefrigeration. At the autorefrigeration temperature the vapor pressure of the salts is substantially nil so that the ammonia overhead of the flashing step is essentially free of hydrogen sulfide. The aqueous residue of the flashing step containing the salts is recycled to the hydrogen sulfide distillation.

3,595,616

METHOD OF PRODUCING CARBONYLS OF METALS OF THE VI AND VII GROUPS AND CARBONYL OF COBALT AND VANADIUM

Nikolai Alexandrovich Belozersky, Kirovsky prospekt 42b, kv. 36, and Olga Davidovna Krichevskaya, Ulitsa Vosstania 9, kv. 33, both of Leningrad, U.S.S.R.

No Drawing. Filed Sept. 20, 1968, Ser. No. 761,292
Int. Cl. C01g *1/04*
U.S. Cl. 23—203C 3 Claims

A method of producing carbonyls of Groups VI and VII metals and also of cobalt and vanadium which comprises subjecting metals of Groups VI and VII, cobalt, vanadium or compounds thereof, to carbonylation in the presence of iron and/or nickel under superatmospheric pressure and at elevated temperature, followed by condensing the carbonyls of said metals from the resulting gas-vapor mixture while said mixture is being refluxed with liquid carbonyls of iron and/or nickel.

3,595,617

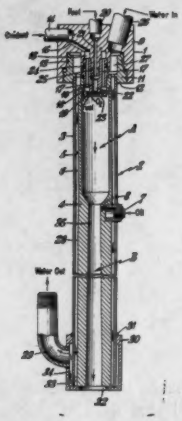
METHOD OF PREPARING SODIUM HYDRIDE

Jaroslav Vit, Vladimir Prochazka, and Oldrich Strouf, Prague, Czechoslovakia, assignors to Ceskoslovenska Akademie Ved, Prague, Czechoslovakia

No Drawing. Filed Apr. 23, 1968, Ser. No. 723,588
Claims priority, application Czechoslovakia, Apr. 28, 1967, 3,141/67
Int. Cl. C01b *6/04*
U.S. Cl. 23—204 3 Claims

A method of producing sodium hydride by reacting sodium with hydrogen in the presence of a surface active agent which is an organic compound having 4 to 16 carbon atoms, one of said carbon atoms being a tertiary carbon atom bearing a single hydrogen atom which is activated by an activating group bonded directly to the tertiary carbon atom.

3,595,618
MANUFACTURE OF CARBON BLACK
Kazuo Kiyonaga, Newark, N.J., and George H. Smith, Sarasota, Fla., assignors to Union Carbide Corporation
Continuation-in-part of application Ser. No. 528,182, Feb. 17, 1966. This application July 22, 1969, Ser. No. 847,793
Int. Cl. C09c *1/50*
U.S. Cl. 23—209.4 **13 Claims**

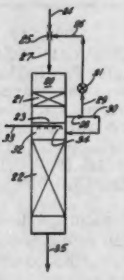


A process for manufacturing carbon black which consists of injecting a hydrocarbon feed material into a stream of very hot, high velocity combusted gases. The velocity must be greater than 1,000 feet per second, and the temperature 4,000° F.–6,000° F. The combusted gases are obtained by burning fuel with pure oxygen or oxygen enriched air. The process makes it possible to obtain channel grade carbon black by means of a furnace process.

ERRATA

For Classes 23—209 and 23—225 see:
Patent Nos. 3,595,965 and 3,595,966

3,595,619
SHIFT CONVERSION PROCESS FOR PRODUCTION OF HYDROGEN
William L. Slater, La Habra, Calif., James R. Muenger, Beacon, N.Y., and Warren G. Schlinger, Pasadena, and Allen M. Robin, Claremont, Calif., assignors to Texaco Inc., New York, N.Y.
Filed Mar. 29, 1968, Ser. No. 717,240
Int. Cl. C01b *1/03*
U.S. Cl. 23—213 **14 Claims**

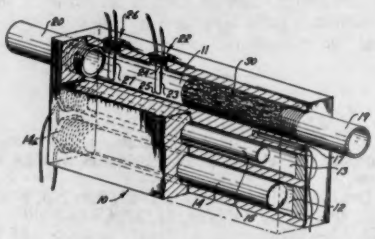


In a steady-state continuous flow fixed-bed water-gas catalyst shift conversion reactor comprising a plurality of separate catalyst beds in series at a temperature in the range of about 350° F. to 1050° F. and a pressure in the range of about 1 to 250 atmospheres, a gaseous feed stream comprising H_2O and CO is converted into H_2 and CO_2. A fraction of the effluent gas stream from the first catalyst bed in the reactor is recycled and mixed with a fresh feed stream of process gas e.g. synthesis gas to comprise said gaseous feed stream to the first catalyst bed. The residual fraction of said effluent gas stream is cooled and introduced into the second catalyst bed in the reactor. CO conversion is improved, process feed steam requirements are reduced, less catalyst is needed, undesirable back and side reactions are minimized, and the system is stabilized. Operating the system at high pressure also reduces overall catalyst requirements.

3,595,620
PREGNANCY DETECTION
Harry W. Gordon, Bronx, N.Y., assignor to Julius Schmid, Inc., New York, N.Y.
No Drawing. Filed Oct. 28, 1968, Ser. No. 771,363
Int. Cl. G01n *21/06, 31/22, 33/16*
U.S. Cl. 23—230 **8 Claims**

A method of in vitro pregnancy detection comprises contacting a urine sample of a female with a diagnostic composition consisting essentially of Bromocresol purple or Chlorophenol Red and observing the color produced.

3,595,621
CATALYTIC ANALYZER
Anthony John Andreatch, 21 Hodge Road, Kendall Park, N.J. 08824
Filed Sept. 30, 1968, Ser. No. 763,625
Int. Cl. G01n *31/10, 31/12*
U.S. Cl. 23—254E **7 Claims**

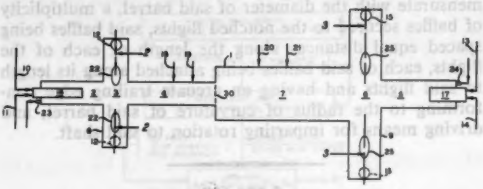


A gas analysis technique and method of detecting the presence of certain constituents of a gas. A filament having a high thermal coefficient of conductivity is coated with an oxide catalyst and positioned in a gas stream to be analyzed. A heater supplies heat to the stream as it is passed to the catalyst coated filament and maintains the stream at temperatures at which the components of the stream to be detected react in the presence of the catalyst. Detecting elements coated with selective catalysts and made of tungsten filaments are disclosed.

3,595,622
CARBON BLACK REACTOR
Paul H. Johnson, Bartlesville, Okla., assignor to Phillips Petroleum Company
Filed May 12, 1969, Ser. No. 823,619
Int. Cl. C09c *1/50;* **C01b** *31/02*
U.S. Cl. 23—259.5 **3 Claims**

A unitary carbon black reactor constructed of two carbon black reactors connectively positioned in opposed

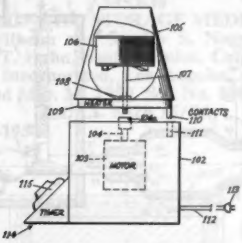
discharge, each being adapted proximate its feed introduction end for the introduction of carbon black-producing reactants or, alternately, for the removal of carbon black produced in the opposed reactor.



3,595,623
APPARATUS FOR EXTRACTING FLAVORING ELEMENTS FROM VEGETABLE MATTER

George S. Sperti, Burlington, Ky., assignor to Institutum Divi Thomae Foundation, Cincinnati, Ohio

Filed May 9, 1967, Ser. No. 637,277
Int. Cl. B01d *11/02;* **A23f** *1/08*
U.S. Cl. 23—269 **5 Claims**



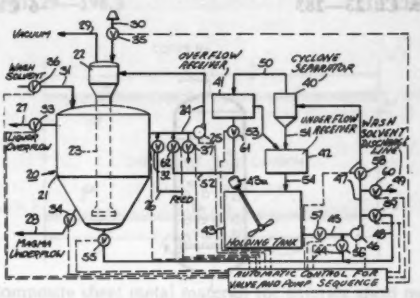
The invention comprises a means for the extraction of flavoring elements from vegetable matter wherein a container for the vegetable matter is located in a surrounding vessel containing the desired amount of extracting liquid. The container has foraminous side walls and filtering means associated therewith. Means are provided for rotating the container within the vessel. Additional means are provided for drawing the extracting fluid from the vessel into the container where, by centrifugal force, the extracting fluid is caused to pass through the vegetable matter, the filtering means and the forminous side walls of the container back into the vessel. Continuous circulation of the extracting liquid between the vessel and the container, through the vegetable matter, produces an excellent yield of flavoring elements from a minimum amount of vegetable matter in a minimum amount of time.

3,595,624
METHOD AND APPARATUS FOR WASHING CRYSTALLIZERS

David L. Bradfield, Westminster, Colo., Robert L. Curfman, Moab, Utah, and Richard Heine, Boulder, and Kurt W. Hitsch, Denver, Colo., assignors to Texas Gulf Sulphur Company, New York, N.Y.

Filed May 16, 1968, Ser. No. 729,708
Int. Cl. B01d *9/00*
U.S. Cl. 23—273 **16 Claims**

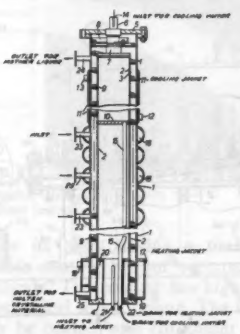
A method for removing soluble deposits on crystallizer surfaces is disclosed which includes the steps of (1) simultaneously draining magma from the crystallizer, separating the solids from the liquid phase of the magma, returning the liquid to the crystallizer to maintain the liquid level, and charging the solids to a holding tank; (2) then draining the liquid remaining in the crystallizer and charging it to the holding tank; (3) next washing out the crystallizer with a suitable solvent for the soluble deposits and draining the crystallizer; (4) thereafter simultaneously draining the suspension retained in the holding tank from the tank, separating the solids from the liquid, feeding the liquid to the crystallizer and returning the solids to the holding tank; and, (5) finally returning the solids remaining in the holding tank to the bottom of the crystalliizer, whereby the crystallizer's contents are substantially restored to an on-stream condition. Apparatus for carrying out this process is also described.



3,595,625
CONTINUOUS CRYSTALLISING EQUIPMENT

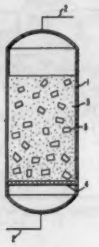
John McNichol Bruce, Cumberland, England, assignor to Distington Engineering Company Limited

Filed Jan. 22, 1968, Ser. No. 699,427
Claims priority, application Great Britain, Jan. 27, 1967, 4,163/67
Int. Cl. B01d *9/04*
U.S. Cl. 23—273F **10 Claims**



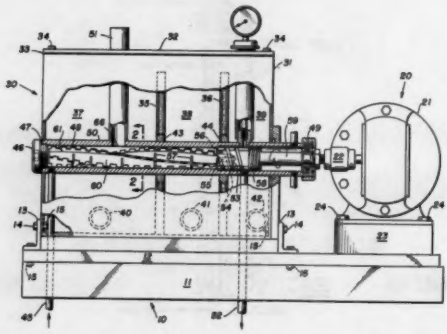
A continuous fractional crystallisation apparatus comprising an elongate annular vessel having inner and outer cylindrical walls forming between them an annular space, a helical member located within said vessel so as to surround said inner cylindrical wall and extending substantially the whole length of said annular space, and means for rotating said helical member about the major axis thereof within said annular space and relative to said cylindrical walls. The helical member is of composite construction and includes a plurality of co-extensive helical elements assembled together so as to be capable of movement relative to each other and so that a first one of said elements will rotate with a constant relationship to the wall surfaces defining said annular space while a second one of said elements rotates with a variable relationship to said wall surfaces.

3,595,626
CERAMIC FILLERS AND COVERS FOR PACKED BEDS
Donald M. Sowards, Claymont, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Nov. 14, 1968, Ser. No. 775,750
Int. Cl. B01j *9/04*
U.S. Cl. 23—283 **6 Claims**



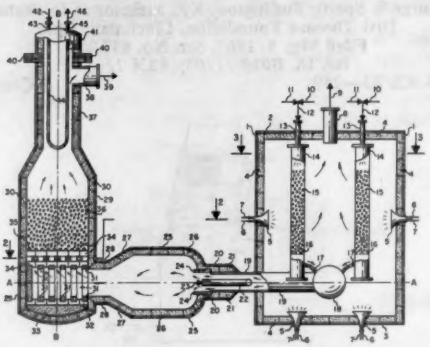
Ceramic honeycomb placed within or on top of a packed bed, and particularly a catalytic bed, improves the effectiveness of the bed.

3,595,627
CONTINUOUS CONDENSATION POLYMERIZATION FINISHER
James H. Abbott, Ballwin, Mo., Nick K. Harakas, Raleigh, N.C., and George A. Latinen, Springfield, Mass., assignors to Monsanto Company, St. Louis, Mo.
Filed Feb. 12, 1969, Ser. No. 798,627
Int. Cl. B01j *1/00, 7/08;* **C08g** *35/00*
U.S. Cl. 23—285 **8 Claims**



A continuous polymerization finisher for removal within a brief holding time of reaction by-products such as water and low boiling organic substances eliminated during linear condensation of polyesters and polyamides. The continuous polymerization finisher comprises a substantially horizontal barrel with closed ends, means for heating said barrel, a supply inlet connected to one end of said barrel, an outlet connected to the opposite end of said barrel, at least one vacuum standpipe proximate the inlet, said standpipe being positioned tangentially to said barrel and disposed within a heating zone, a rotatable member mounted within said barrel proximate the outlet and located within said heating zone, an agitating shaft connected to said rotatable member, said shaft being provided with a plurality of notched flights helixed at a predetermined angle, said shaft extending the length of said barrel, the notched flights having a rotatable sweep commensurate with the diameter of said barrel, a multiplicity of baffles secured to the notched flights, said baffles being spaced equal distances along the length of each of the flights, each of said baffles being attached along its length to said flights and having an arcuate trailing edge conforming to the radius of curvature of said barrel, and driving means for imparting rotation to said shaft.

3,595,628
APPARATUS FOR REFORMING HYDROCARBONS
John M. Connor, New York, N.Y., and Bernard C. Walton, West Orange, N.J., assignors to Chemical Construction Corporation, New York, N.Y.
Filed Nov. 26, 1968, Ser. No. 778,940
Int. Cl. B01j *9/04*
U.S. Cl. 23—288 **4 Claims**

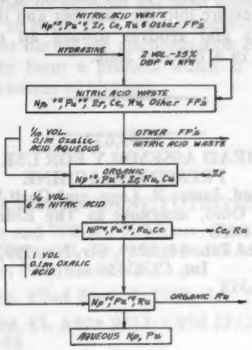


An improved secondary reformer is provided for use in conjunction with a primary reformer, for the catalytic conversion of fluid hydrocarbon by reaction with steam and air into a crude synthesis gas principally containing hydrogen carbon monoxide and nitrogen, which is suitable after further processing for usage in ammonia synthesis or the like. The apparatus features a separate refractory-lined reaction chamber for reaction of the primary reformer effluent gas stream with air, prior to passing the resulting intermediate process gas stream to secondary reforming. The primary reformer effluent transfer pipe, air inlet pipe, reaction chamber and transfer duct between the reaction chamber and the secondary reformer are coaxially aligned to provide uni-directional linear thermal expansion, which thus provides for stress-free operation of the apparatus combination.

3,595,629
PLUTONIUM AND NEPTUNIUM EXTRACTION PROCESS
Wallace W. Schulz, Richland, Wash., assignor to the United States of America as represented by the United States Atomic Energy Commission
Filed Aug. 14, 1969, Ser. No. 850,150
Int. Cl. B01d *11/04;* **C01g** *56/00*
U.S. Cl. 23—341 **3 Claims**

A process of separating plutonium and neptunium values from aqueous acid waste solutions containing these and other values by adding hydrazine to the aqueous waste solution to reduce selectively the neptunium to the tetravalent state and contacting the solution with a water immiscible organic solution of dibutylbutyl phosphonate to extract the tetravalent neptunium and pluto-

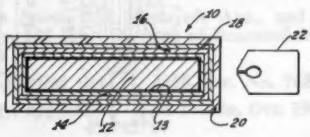
nium values plus zirconium, cerium and ruthenium values present. After separating the organic phase from the aqueous waste solution, the coextracted zirconium, cerium and ruthenium values are scrubbed from the organic phase before stripping the neptunium and plutonium values with an aqueous oxalic acid stripping solution.



3,595,630
MAGNETIC STORAGE MEDIUM

George E. Wilhelm and Stanley S. Nagy, Studio City, and Moon T. Hahn, Santa Monica, Calif., assignors to Thin Film Incorporated, Los Angeles, Calif.

Filed Mar. 10, 1969, Ser. No. 805,573
Int. Cl. B32b *15/04*
U.S. Cl. 29—195 12 Claims



A magnetizable storage member is formed from a substrate and thin layers deposited on the substrate. The thin layers include an element having properties of initially being non-magnetic and of becoming magnetizable when subjected to heat at a particular elevated temperature. A thin chemically inert layer is disposed between the thin magnetizable layers. The magnetizable layers may be nickel and the chemically inert layer may be gold. The magnetizable storage member is provided with magnetic properties corresponding to those provided by a storage member having iron oxide layers. A hard, thin, non-magnetic protective coating may be disposed on the storage member and may be made from a silicone.

The storage member is formed from the different layers discussed above and is then baked at the particular elevated temperatures to make the storage member magnetizable.

3,595,631
COMPOSITE ALUMINUM ALLOY

Irwin Broverman, Orange, Conn., assignor to Olin Mathieson Chemical Corporation

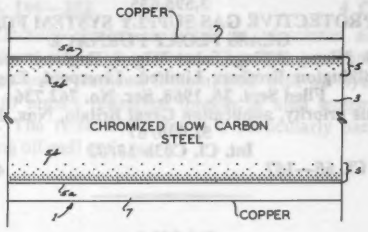
No Drawing. Original application Apr. 23, 1968, Ser. No. 723,629, now Patent No. 3,436,804, dated Apr. 8, 1969. Divided and this application Nov. 1, 1968, Ser. No. 794,445
Int. Cl. B32b *15/00*
U.S. Cl. 29—197.5 3 Claims

The disclosure teaches a composite aluminum alloy having high strength and good bright anodizing characteristics. The core is an aluminum base alloy containing from 2 to 10% magnesium, and the cladding is an aluminum base alloy containing from 0.01 to 2.5% magnesium.

3,595,632
CORROSION-RESISTANT COMPOSITE SHEET METAL MATERIAL

John W. Ross, Cumberland, R.I., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Sept. 23, 1968, Ser. No. 761,722
Int. Cl. B32b *15/00*
U.S. Cl. 29—196.3 10 Claims

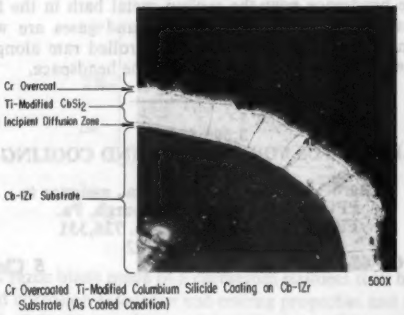


Composite sheet metal material for exterior sheet metal building products, such as gutters, downspouts, flashing, roofing, siding and the like, and resistant to corrosion, including galvanic corrosion, consisting of a core layer of chromized low carbon steel clad with copper.

3,595,633
COATINGS FOR HIGH-TEMPERATURE ALLOYS

Leonard A. Friedrich, West Hartford, and Emanuel C. Hirakis, Mansfield Center, Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed Apr. 14, 1964, Ser. No. 360,178
Int. Cl. B32p *3/00*
U.S. Cl. 29—198 25 Claims



Cr Overcoated Ti-Modified Columbium Silicide Coating on Cb-1Zr Substrate (As Coated Condition)

Columbium or its alloy having a titanium-modified columbium silicide coating has an overcoating of chromium on the silicide. The coating has high resistance to thermal and mechanical shock failure. The silicide coated columbium may be coated with chromium by surrounding the coated metal with a powdered pack of chromium and a volatilizable halide salt and an inert filler and heating to cause volatilization of the halogen in the halide salt.

3,595,634
ANTICORROSIVE GRINDSTONE

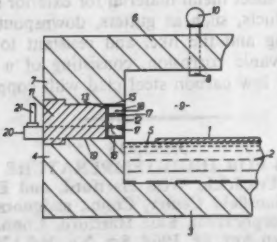
Kozo Sato, 89 Yamamoto-cho, Minami 3-chome, Yao, Osaka Prefecture, Japan

No Drawing. Continuation-in-part of abandoned application Ser. No. 650,662, June 22, 1967. This application Sept. 11, 1969, Ser. No. 857,233
Claims priority, application Japan, Sept. 22, 1965, 40/58,281
Int. Cl. C08g *51/12*; C08h *17/12*
U.S. Cl. 51—298 6 Claims

A method for producing a grindstone characterized by molding an epoxy resin binder with a hardening agent,

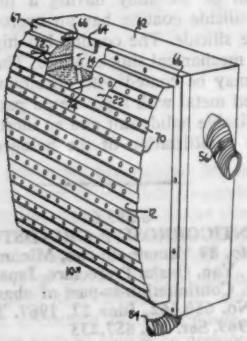
active sulphur and sodium nitrite. The novel grindstone is used to prevent rust and uneven finishing of a treated metal surface. The grindstone replenishes the loss due to hydrolysis of the grinding solution, thereby enabling the grinding solution to maintain its lubricating and anti-corrosive properties.

3,595,635
PROTECTIVE GAS SUPPLY SYSTEM FOR A GLASS FLOAT FURNACE
Frank Nixon, Billinge, near Wigan, England, assignor to Pilkington Brothers Limited, Liverpool, England
Filed Sept. 26, 1968, Ser. No. 762,736
Claims priority, application Great Britain, Nov. 15, 1967, 52,036/67
Int. Cl. C03b *18/02*
U.S. Cl. 65—157 **4 Claims**



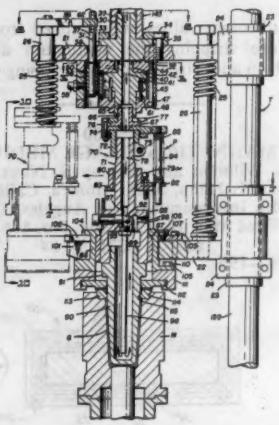
Protective atmosphere containing hydrogen is supplied to the headspace over the molten metal bath in the float process for flat glass manufacture, and gases are withdrawn from the headspace at a controlled rate along an elongated path communicating with the headspace.

3,595,636
APPARATUS FOR SHAPING AND COOLING GLASS SHEETS
Richard V. Posney, Freeport, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.
Filed May 3, 1968, Ser. No. 726,331
Int. Cl. C03b *23/02*
U.S. Cl. 65—287 **5 Claims**



A mold for fabricating bent, tempered glass sheets having an apertured wall contoured to the shape desired for the bent glass enclosing a fluid supply chamber characterized by spaced, elongated, shallow grooves and a row of apertures extending from the floor of said grooves through the rear surface of the contoured wall to deliver fluid under pressure into the chamber and thence through said apertures and grooves toward an adjacent glass sheet surface in a diffused state.

3,595,637
PLUNGER HEAD ASSEMBLY FOR USE IN A GLASS PRESSING MACHINE
John W. Eldred, James B. Legg, and Cecil W. McCreery, Columbus, Ohio, assignors to The Eldred Company, Columbus, Ohio
Filed Feb. 14, 1969, Ser. No. 799,481
Int. Cl. C03b *11/06*
U.S. Cl. 65—318 **15 Claims**



A plunger head assembly mounted on a glass pressing or forming machine to cooperate with a press mold on the movable mold table thereof, the mounting being such that quick removal and replacement of the plunger head is possible. Also, it is provided with means permitting self-centering thereof relative to the mold with which it cooperates. In addition, the head assembly is such that the forming pressure for forming the glass charge in the mold is applied through actual rigid contact of relatively movable members of the assembly and after formation, the forming pressure is released and lesser but sufficient pressure is applied by fluid pressure means to maintain contact of the forming part of the plunger until the formed glass sufficiently cools and sets to retain its shape.

3,595,638
PROCESS FOR CONVERTING PETROLEUM COKE TO A NITROGEN CONTAINING FERTILIZER-MULCH
William P. Doyle, Lagrangeville, Robert Y. Heisler, Wappingers Falls, and John A. Patterson, Fishkill, N.Y., assignors to Texaco Inc., New York, N.Y.
No Drawing. Filed Nov. 24, 1969, Ser. No. 879,521
Int. Cl. C05f *11/02*
U.S. Cl. 71—1 **9 Claims**

Petroleum coke is converted to a product containing up to 12.3% nitrogen by ammoxidation of the coke folowed by treating the ammoxidized product with concentrated nitric acid and neutralizing the resulting product with con-

centrated ammonium hydroxide. If the initial ammoxidation step is omitted a product containing around 7% nitrogen is obtained. The product will not harm plants and acts as a mulch after its nitrogen has been depleted. A micronutrient such as borax or a similar water-soluble salt can be adder either during the ammoxidation or the neutralization steps to form a product which is both a micronutrient and a source of nitrogen.

3,595,639

TRIAZINYLAMINO SUBSTITUTED HERBICIDES

Paul J. Mason and William P. Moore, Chester, and Harry E. Ulmer, Hopewell, Va., assignors to Allied Chemical Corporation, New York, N.Y.

No Drawing. Filed Sept. 4, 1968, Ser. No. 757,456

Int. Cl. A01n *9/22;* C07d *55/20*

U.S. Cl. 71—93 4 Claims

N,N'-bis[(2 - chloro-4-alkylamino-6-s-triazinyl)amino]-dimethyl ethers are prepared by reacting a 2-alkylamino-4-amino-6-chloro-s-triazine with formaldehyde in alkaline solution. The products are highly selective herbicides. The herbicides are particularly useful because they will selectively destroy weeds in both corn and wheat crops, making possible an initial crop of corn immediately followed by a wheat crop.

3,595,640

PROCESS FOR PRODUCING DISPERSION STRENGTHENED IRON POWDER

W. J. Dennis Stone, 253 Westcroft Ave., and David Stewart Hay, 355 Penn St., both of Beaconsfield, Quebec, Canada

No Drawing. Filed Oct. 17, 1968, Ser. No. 768,541

Claims priority, application Great Britain, Oct. 19, 1967, 47,742/67

Int. Cl. B22f *9/00, 3/12*

U.S. Cl. 75—.5AA 4 Claims

A finely divided natural hematite ore concentrate containing silica, alumina and other acid insoluble impurities is passed through a high intensity wet magnetic separator to remove impurities other than alumina, after which the purified, finely divided hematite is reduced in the presence of hydrogen at a temperature below the melting point of iron and the iron powder obtained with alumina uniformly dispersed therein is collected.

3,595,641

PROCESS FOR PREPARING INTERMETALLIC BERYLLIDES

Milton S. Roush, Claude R. Wheeler, and Muneo Fujii, Phoenix, Ariz., assignors to The Garrett Corporation

No Drawing. Filed Oct. 10, 1968, Ser. No. 766,612

Int. Cl. C22c *25/00*

U.S. Cl. 75—.5 5 Claims

Intermetallic beryllides are prepared by induction melting particles of beryllium and a refractory metal, which particles are larger than 50 mesh at a temperature of at least about 3000° F. under slight pressure of an inert atmosphere, processing the resulting melted ingot into a powder, treating the powder with an aqueous solution of a disodium salt of ethylenediaminetetraacetic acid having a pH between about 4.0 and 6.0 followed by sintering the powder to form a solid beryllide product.

3,595,642

PORTLAND CEMENT WITH IMPARTED REFRACTORY CHARACTER

Charles H. Miller, Balboa, Calif., assignor to Motus Chemicals, Inc.

Filed Sept. 24, 1968, Ser. No. 761,991

Int. Cl. E21b *33/13;* C04b *13/02*

U.S. Cl. 166—292 4 Claims

A refractory cement in which an aluminum silicate, having from about 15 to about 27 weight percent of an aluminum oxide content, is combined with an hydraulic cement to impart resistance thereto to high temperature changes. The refractory cement is particularly useful in cementing oil well casings.

3,595,643

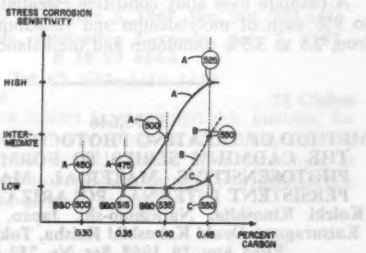
RAZOR BLADE OF A CHROMIUM CONTAINING STEEL

Joseph F. Boyce, Braintree, Mass., and Axel Vilhelm Bernstein and Jan-Christer Henric Ovesson Carlén, Sandviken, Sweden, assignors to Sandvikens Jernverks Aktiebolag, Sandviken, Sweden

Filed June 10, 1966, Ser. No. 556,691

Int. Cl. C22c *33/00*

U.S. Cl. 75—126C 3 Claims



A razor blade made of a chromium stainless steel having good corrosion resistance and cutting properties and also a method forming such an article is disclosed. The steel contains .30–.45 carbon, 11–16 Cr, a member of the class consisting of tungsten and molybdenum wherein the amount of Mo may be .5–2.5% and W 1.0–5%, Si max. 70, Mn 1.5 max., 0–2% of Va, Ta, Ti and Zr and 0–1% Co, Ni, Cu, Al, Be and B. The steel may be formed by cold rolling, hardening by heating to a range of 1000–1150° C. Subsequent tempering may be utilized.

3,595,644

HAFNIUM BASE ALLOY (CR-Al)

Vernon L. Hill, Niles, and Harry R. Nichols, Chicago, Ill., assignors to IIT Research Institute, Chicago, Ill.

No Drawing. Filed Oct. 21, 1968, Ser. No. 769,399

Int. Cl. C22c *27/00*

U.S. Cl. 75—134V 3 Claims

Hafnium base alloy containing between about 15 and about 35 weight percent tantalum and between about 0.5 and about 5 weight percent chromium. The alloy may

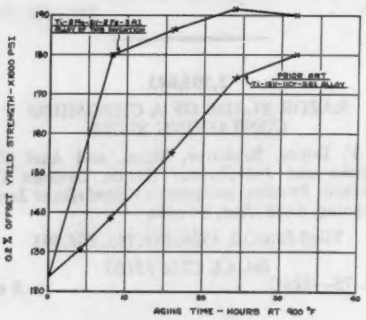
contain up to about 3.5 weight percent silicon and up to about 3.5 weight percent aluminum.

3,595,645

HEAT TREATABLE BETA TITANIUM BASE ALLOY AND PROCESSING THEREOF

Donald B. Hunter and Harry W. Rosenberg, Henderson, Nev., assignors to Titanium Metals Corporation of America, New York, N.Y.

Filed Mar. 16, 1966, Ser. No. 534,759
Int. Cl. C22c *15/00*
U.S. Cl. 75—175.5 5 Claims



A titanium base alloy consisting essentially of about 7 to 9% each of molybdenum and vanadium, 1.5–2.75% iron, 2.5 to 3.5% aluminum and the balance titanium.

3,595,646

METHOD OF TREATING PHOTOCONDUCTORS OF THE CADMIUM SERIES TO FORM ELECTRO-PHOTOSENSITIVE MATERIAL MANIFESTING PERSISTENT INTERNAL POLARIZATION

Koichi Kinoshita, Narashino-shi, Japan, assignor to Katsuragawa Denki Kabushiki Kaisha, Tokyo-to, Japan

Filed Aug. 19, 1968, Ser. No. 753,494
Claims priority, application Japan, Aug. 22, 1967, 42/53,429
Int. Cl. G03g *5/02, 5/08*
U.S. Cl. 96—1.5 5 Claims

An impurity is diffused, by firing, into the surface of photoconductive material of the cadmium series to form a thin surface layer containing deep trap levels whereby to obtain an electrophotosensitive material manifesting persistent internal polarization effect.

3,595,647

COPYING MATERIAL FOR USE IN HIGH-SPEED ELECTROPHOTOGRAPHY

Akiyoshi Yasumori, Makoto Nakamura, Akihiro Toguchi, and Setsuo Soga, Tokyo, and Shizuya Shimizu, Numazu-shi, Japan, assignors to Kabushiki Kaisha Ricoh, Tokyo, Japan

Filed Oct. 23, 1968, Ser. No. 769,872
Claims priority, application Japan, Oct. 31, 1967, 42/69,991
Int. Cl. G03g *5/00*
U.S. Cl. 96—1.5 1 Claim

A high-speed electrophotographic copying material comprising a support and a photoconductive layer formed of a binder and coated on one surface of said support, in which the binder comprises a mixture consisting of (I) a copolymer produced by polymerizing one or more polymeric monomers containing nitrogen and one or more vinyl monomers together and (II) one of the following; copolymer (1), mixture (2), and mixture (3):

(1) a copolymer of (b) hydroxyethyl—(or metha) acrylate and (b–1) vinyl monomer having carboxylic acid radicals.

(2) a mixture of (c) a copolymer formed from the above-mentioned carboxylic acid monomer and (c–1) the aforementioned vinyl monomer, and an organic acid anhydride,

(3) a mixture consisting of the copolymer as described in (1) and the organic acid anhydride mentioned in (2).

3,595,648

POLY-N-VINYL-3-NITRO CARBAZOLE PHOTOCONDUCTIVE MATERIAL

Kazuo Tubuko, Tokyo, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan

No Drawing. Filed Mar. 13, 1968, Ser. No. 712,590
Claims priority, application Japan, Mar. 23, 1967, 42/17,651
Int. Cl. G03g *5/06*
U.S. Cl. 96—1.6 6 Claims

An organic photoconductive material for use in electrophotographic copying paper, said material consisting essentially of poly-N-vinyl-3-nitrosocarbazole which is quite easily synthesized by introducing a nitroso radical into poly-N-vinyl carbazole, and also an electrophotographic copying paper prepared with a support paper and a light-sensitive layer which is formed with the aforesaid organic photoconductive material on one surface of said support paper.

3,595,649

ELECTROPHOTOGRAPHIC RECORDING PLATE FOR LITHOGRAPHY

Sakae Shimizu, Kawasaki-shi, Junji Kurokawa, Yokohama-shi, Takayoshi Tanno, Tokyo, and Noriyuki Usui, Kawasaki-shi, Japan, assignors to Kabushiki Kaisha Ricoh, Tokyo, Japan

No Drawing. Filed Mar. 25, 1968, Ser. No. 715,564
Int. Cl. G03g *5/04, 5/08*
U.S. Cl. 96—1.5 5 Claims

An electrophotographic copying paper which is comprised of a support sheet, an intermediate layer formed on one surface of said support sheet with a water-soluble thermo-setting resin containing a hydroxymethyl radical, a photoconductive layer consisting of a photoconductive substance securely adhered to the upper surface of said intermediate layer by the use of a thermosetting resin having a hydroxyethyl radical and a carboxyl radical, and a layer of low electric resistance provided on the reverse surface of said support sheet, serves as a highly satisfactory recording plate for lithography.

3,595,650

PHOTOCONDUCTIVE COATING COMPOSITIONS, REPRODUCTION MATERIALS MADE THEREWITH, AND REPRODUCTION PROCESSES

Robert D. Holzinger, Homewood, Joseph E. Miller, Dolton, and Alexander S. Wolf, Chicago Heights, Ill., assignors to The Sherwin-Williams Company, Cleveland, Ohio

No Drawing. Filed Jan. 13, 1967, Ser. No. 608,992
Int. Cl. G03g *5/08, 13/22*
U.S. Cl. 96—1.8 21 Claims

Electrophotographic coating compositions and coated substrates comprising a metallic oxide (e.g., zinc oxide) are prepared with an oil modified polycarboxy-polyol binder resin. The binder resin for dry development should have an acid value of 5–50, a hydroxyl value of 33–133 and a cure rate of 50–110 seconds at 200° C., and for liquid development an acid value of 5–50, a maximum hydroxyl value of 66 and a cure rate of 5 to 40 seconds at 200° C.

3,595,651

FILM COLOR TRANSPARENCY AND METHOD OF MANUFACTURE

Hale M. Luig, Brookmont, Md.
(4511 Sangamore Road, Washington, D.C. 20016)

Continuation-in-part of application Ser. No. 562,439, June 28, 1966. This application Feb. 13, 1969, Ser. No. 800,825

Int. Cl. G03c 5/00

U.S. Cl. 96—27 6 Claims

Method for making film color transparencies from black and white originals wherein photographic films exposed through conventional photomechanical processes are masked and the gelatin coating on either side of the exposed photographic film is treated successively with nontoxic water soluble dyes by a rub-on technique. The method provides an inexpensive rapid and safe means for making film color transparencies.

3,595,652

DIFFUSION TRANSFER PRODUCT AND PROCESS HAVING SILICEOUS MATERIAL AND OPACITY PROVIDING MATERIAL IN THE EMULSION

Leonard C. Farney, Melrose, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

No Drawing. Filed Jan. 11, 1966, Ser. No. 519,955

Int. Cl. G03c 5/54

U.S. Cl. 96—29 20 Claims

Photographic product for forming a composite print viewable as a positive reflection print, the product including a light-sensitive silver halide emulsion and a light opacity-providing material in the same layer as the emulsion or in an overlying layer, wherein the layer containing the opacity-providing material further includes a siliceous material.

3,595,653

ACID-CONTAINING LACQUER FOR PLANOGRAPHIC PRINTING PLATES

Hartmut Steppan, Wiesbaden-Dotzheim, and Fritz Uhlig, Wiesbaden-Biebrich, Germany, assignors to Kalle Aktiengesellschaft, Wiesbaden-Biebrich, Germany

Filed May 15, 1967, Ser. No. 638,646

Claims priority, application Germany, May 18, 1966, K 59,297

Int. Cl. G03f 7/02

U.S. Cl. 96—33 12 Claims

Disclosed is an improvement of a known planographic printing plate lacquer comprising a water insoluble film-forming resin in solution in a solvent mixture containing about 40 to 80% by weight of a polyhydric alcohol, the improvement being the addition of about 0.05 to 10% by weight of an acid, other than oxalic, having a dissociation constant greater than 10^{-3} at 20° C.

3,595,654

PROCESS FOR PREPARING COLOR PROOFS

Stephen R. Hawley, West Chicago, and Bernard M. Bartosch, Hoffman Estates, Ill., assignors to Continental Can Company, Inc., New York, N.Y.

No Drawing. Filed May 29, 1968, Ser. No. 732,823

Int. Cl. G03c 5/00

U.S. Cl. 96—35 6 Claims

Color proofs, colored facsimiles of a colored design which is to be printed on an article, are prepared by exposing a photographic film having a transparent base to an image of the design. The film is developed, but not fixed, and then contacted with an etching solution to remove the exposed areas of the emulsion layer. The etched film is then fixed and coloring material applied thereto, the coloring material adhering to the non-etched (unexposed) areas of the emulsion.

3,595,655

NON-SILVER DIRECT POSITIVE DYES BLEACH-OUT SYSTEM USING POLYMETHINE DYES AND COLORLESS ACTIVATORS

Ian D. Robinson, Auburndale, and Joanne C. Gerlach, Watertown, Mass., assignors to Arthur D. Little, Inc., Cambridge, Mass.

Filed Oct. 3, 1968, Ser. No. 764,661

Int. Cl. G03c 1/72, 5/24

U.S. Cl. 96—48 20 Claims

A direct positive, bleach-out photographic system suitable for photography and photocopy work. A polymethine dye and essentially colorless activator, supported in a binder, form the photosensitive system which is bleached out when exposed to a range of electromagnetic radiation extending from X-rays to the visible spectrum. The system is adapted to forming prints and transparencies in black and white, monochrome and full color.

3,595,656

REPROGRAPHIC MATERIALS CONTAINING A WATER-INSOLUBLE AZIDOCHALCONE

Hans Ruckert, Wiesbaden-Schierstein, Herbert Maar, Wiesbaden, and Walter Lüders, Neu-Isenburg, Germany, assignors to Kalle Aktiengesellschaft, Wiesbaden-Biebrich, Germany

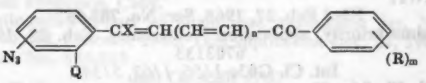
No Drawing. Filed July 3, 1968, Ser. No. 742,141

Claims priority, application Germany, July 7, 1967, P 15 97 614.4

Int. Cl. G03c 1/52, 1/58

U.S. Cl. 96—49 31 Claims

This invention relates to a reprographic material for the production of printing forms or other image-bearing products, the material including a layer containing at least one water-insoluble photosensitive azidochalcone compound of the general formula



in which Q is hydrogen or a substituent group, each R is a substituent group, X is hydrogen or halogen, $m=1$ or 2 and $n=0$ or 1, the azido group being in the 3- or 4-position of the benzene ring relative to the unsaturated chain, and one substituent group R may be linked with a further substituent group R of the same benzene ring or of the corresponding benzene ring of a second structure of the same kind.

3,595,657

NON-SILVER DIRECT POSITIVE DYE BLEACH-OUT SYSTEM USING INDIGOID DYES AND COLORLESS ACTIVATORS

Ian D. Robinson, Auburndale, and Joanne C. Gerlach, Watertown, Mass., assignors to Arthur D. Little, Inc., Cambridge, Mass.

Filed Oct. 3, 1968, Ser. No. 764,744

Int. Cl. G03c 5/24, 1/72

U.S. Cl. 96—48 13 Claims

A direct positive bleach-out photographic system suitable for photography and photocopy work. An indigoid dye and activator, supported in a binder, form the photosensitive system which is bleached out when exposed to ultraviolet light.

3,595,658

NON-SILVER DIRECT POSITIVE DYE BLEACH-OUT SYSTEM USING POLYMETHINE DYES AND COLORED ACTIVATORS

Joanne C. Gerlach, Watertown, and Ian D. Robinson, Auburndale, Mass., assignors to Arthur D. Little, Inc., Cambridge, Mass.

Filed Oct. 3, 1968, Ser. No. 764,662
Int. Cl. G03c 1/72, 5/24
U.S. Cl. 96—48 19 Claims

A direct positive bleach-out photographic system suitable for photography and photocopy work. A polymethine dye and a colored activator, supported in a binder, form the photosensitive system. Most of the combinations are bleached out when exposed to visible light. A few are sensitive to ultraviolet light and to X-rays. The system is adapted to forming prints and transparencies in black and white, monochrome and full color.

3,595,659

NON-SILVER DIRECT POSITIVE DYE BLEACH-OUT SYSTEM USING INDIGOID DYES AND COLORED ACTIVATORS

Joanne C. Gerlach, Watertown, Ian D. Robinson, Auburndale, and Kenneth D. Jordan, Walpole, Mass., assignors to Arthur D. Little, Inc., Cambridge, Mass.

Filed Oct. 3, 1968, Ser. No. 764,766
Int. Cl. G03c 1/72, 5/24
U.S. Cl. 96—48 19 Claims

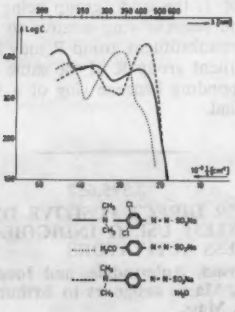
A direct positive bleach-out photographic system suitble for photography and photocopy work. An indigoid dye and a colored activator, supported in a binder, form the photosensitive system which is bleached out when exposed to visible light. A few are sensitive to ultraviolet light. The system is adapted to forming prints and transparencies in black and white, monochrome and full color.

3,595,660

METHOD OF PRODUCING PHOTOGRAPHIC IMAGES BY PHYSICAL DEVELOPING UTILIZING DIAZOSULFONATES

Leendert Klaas Hellinga van Beek, Johannes Helfeerich, and Hendrik Jonker, Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 27, 1968, Ser. No. 708,593
Claims priority, application Netherlands, Feb. 28, 1967, 6703133
Int. Cl. G03c 1/56, 1/62, 5/34
U.S. Cl. 96—49 8 Claims



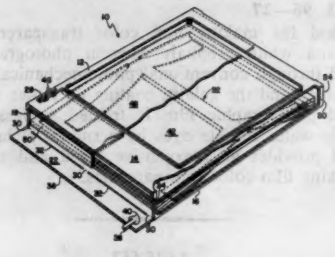
Benzenediazosulfonates having dissociation constants at a pH of 7.8 of not greater than 5×10^{-7} and molecular extinction coefficients at 435 nm. of at least 1000 employed in light sensitive layers used in the production of photographic images by the physical development of a latent mercury metal image.

3,595,661

PHOTOGRAPHIC FILM ASSEMBLAGE

Nicholas Gold, Arlington, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 16, 1968, Ser. No. 784,161
Int. Cl. G03b 17/26; G03c 3/00
U.S. Cl. 96—76 7 Claims



A photographic film assemblage including a container having a wall with a light-transmitting section therein and a plurality of film units, each including a photosensitive area surrounded by a margin, stacked within the container, with the photosensitive areas located in alignment with the light-transmitting section. A support member is provided for engaging and supporting the film unit furthest from the light-transmitting section only at margins of the film unit and urging the film unit nearest the light-transmiting section against the wall in position for exposure to light transmitted through the light-transmitting section.

3,595,662

LIGHT-SENSITIVE MATERIAL

Jozef Frans Willems, Wilrijk, and Robrecht Julius Thiers, Brasschaat, Belgium, assignors to Gevaert-Agfa N.V., Mortsel, Belgium

No Drawing. Filed Dec. 7, 1967, Ser. No. 688,670
Claims priority, application Great Britain, Mar. 6, 1967, 10,372/67
Int. Cl. G03c 1/34
U.S. Cl. 96—109 12 Claims

A light-sensitive material comprising a silver halide emulsion layer and containing a mercury(II) chelate of a (poly)amino-(poly)carboxylic acid in the form of the acid or a water-soluble salt is described. The chelate exerts a stabilizing and fog-inhibiting action upon the light-sensitive material without causing appreciable desensitization.

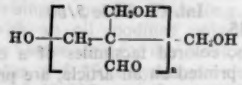
3,595,663

GELATIN EMULSION HARDENING COMPOSITION

Salvatore Emmi, Binghamton, N.Y., assignor to GAF Corporation, New York, N.Y.

No Drawing. Filed July 15, 1968, Ser. No. 744,632
Int. Cl. G03c 1/30
U.S. Cl. 96—111 4 Claims

A gelatin emulsion hardener comprising a water soluble condensation product prepared by condensing acrolein and formaldehyde under alkaline conditions, and having the general formula:



wherein n is an integer from 1–5, inclusive. Delayed hardening is obtained by the use of the bisulfite adduct of the addition product.

3,595,664

PHOTOSENSITIVE CONDENSATION POLYMERS AND THE PROCESS OF MAKING SAME

John B. Rust, Los Angeles, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Mar. 20, 1968, Ser. No. 714,532
Int. Cl. G03c *9/00, 1/68*
U.S. Cl. 96—35.1 8 Claims

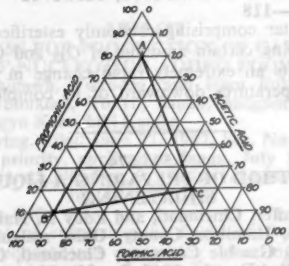
Method of producing transparent and colored resinous film by differential polymerization of compositions of polymerizable monomers and polymers from water-soluble and solvent soluble materials providing polymers derived from the condensation or combined addition and condensation reaction of (A) a formaldehyde material, (B) a photosensitive amide of an olefinic carboxylic acid or the photosensitive derivatives thereof, and (C) a cyanamide derivative as a member of the group consisting of thiourea, urea, guanidine and melamine, derivatives, and mixtures thereof, with or without (D) the soluble mono and polyvalent salts and salt reagents useful in photosensitivity, which compositions and polymers are photopolymerizable in the presence of a light activated catalyst to produce photopolymer masses by addition polymerization and simultaneously therewith or before or after condensation polymers are formed.

3,595,665

INHIBITION OF MOULD GROWTH ON CROPS

John Jackson Huitson, Banstead, and Peter William John Watts, Beddington, England, assignors to BP Chemicals (U.K.) Limited, London, England

Filed Dec. 11, 1967, Ser. No. 689,678
Claims priority, application Great Britain, Dec. 23, 1966, 57,698/66
Int. Cl. A23k *3/00*
U.S. Cl. 99—8 11 Claims


PROPIONIC ACID
ACETIC ACID
FORMIC ACID
A = 10% FORMIC / 10% ACETIC / 80% PROPIONIC
B = 80% FORMIC / 10% ACETIC / 10% PROPIONIC
C = 10% FORMIC / 60% ACETIC / 30% PROPIONIC

Acetic acid, formic acid or binary and ternary mixtures of acetic, propionic and formic acids are used to prevent mould growth on crops and animal feedstuffs such as wheat and barley. The acid is preferably added in amounts 0.1 to 10% by weight of the dry crop, and may be added as an aqueous solution.

3,595,666

PROCESS OF INCREASING FAT-ABSORPTIVITY OF STARCH BY ENZYMATIC HYDROLYSIS

Herbert N. Dunning, Minneapolis, and Eugene H. Borochoff and Howard Olevksy, St. Louis Park, Minn., assignors to General Mills, Inc.

No Drawing. Filed Jan. 5, 1968, Ser. No. 695,831
Int. Cl. A23k *1/00*
U.S. Cl. 99—10 2 Claims

A process for the improvement in shaping of a fat containing amylaceous food product by extrusion, said product being normally not readily shapeable by extrusion under conditions conventionally employed in the food industry due to the affect of the fat on the food product as a whole; the process comprising the essentially simultaneous contacting of a fat containing amylaceous food product by an alpha-amylase and an amyloglucosidase to partially degrade the starch and the shaping by extrusion of the treated material.

3,595,667

SEAMING OR SEALING SYNTHETIC SAUSAGE CASINGS WITH ISOCYANATE ADHESIVE COMPOSITION

Albin F. Turbak and Henry J. Rose, Danville, Ill., assignors to Tee-Pak, Inc.

No Drawing. Application Nov. 26, 1968, Ser. No. 779,230, which is a continuation-in-part of application Ser. No. 718,343, Apr. 3, 1968. Divided and this application May 1, 1969, Ser. No. 821,067
Int. Cl. A22c *13/00*
U.S. Cl. 99—176 7 Claims

A novel adhesive for sealing or joining sheets or films of regenerated cellulose or fiber-reinforced regenerated cellulose comprises a mixture of a polymeric polyisocyanate and an activator, such as a polyol or a reaction product of a polyol with ethylene oxide or the like, diluted to a suitable consistency with a volatile inert solvent. The coating composition may be used to seam sheets of regenerated cellulose or paper-reinforced regenerated cellulose into tubular form or in forming cemented end closures on tubes of regenerated cellulose or paper-reinforced regenerated cellulose. The adhesive composition is preferably applied in a very thin film and cured by heating at an elevated temperature, e.g. 300–320° F., for about 20–30 sec., more or less.

3,595,668

CONTINUOUS COFFEE ROASTING PROCESS

Lee Nutting, Berkeley, George S. Chong, Kensington, Jarrott T. Miller, San Mateo, and John G. McChesney, Tiburon, Calif., assignors to Hills Bros. Coffee, Inc., San Francisco, Calif.

Continuation-in-part of abandoned application Ser. No. 560,682, June 27, 1966. This application Dec. 22, 1969, Ser. No. 886,863
Int. Cl. A23f *1/02*
U.S. Cl. 99—68 16 Claims

Green Coffee Beans
Preheating In The Presence Of Steam Under Pressure
Suddenly Discharging To The Atmosphere
Contacting With Heated Roasting Gas
Cooling
Roast Coffee

A continuous process for roasting coffee involving (1) the continuous and progressive preheating of green coffee beans in the presence of steam at 60 to 200 p.s.i. for 5 to 15 minutes to effect hydrolysis and partial roasting of

the beans, such preheating developing a characteristic flavor and aroma profile (as determined by gas chromatography) which, however, is not fully developed (as determined organoleptically following aqueous extraction) (2) the continuous and progressive discharge of the preheated beans to the atmosphere and (3) the immediate continuous and progressive roasting of the preheated beans in high velocity roasting gases at 450° to 575° F. for ½ to 15 minutes which effect fluidization of the beans together with further hydrolysis and controlled heating and drying of the same, such fluidized roasting completing the roasting process by fully developing the characteristic flavor and aroma profile developed during the preheating (as determined both by gas chromatography and organoleptically). Following the described preheating and roasting, the roasted beans can be (4) continuously and progressively cooled in high velocity cooling gases which effect fluidization of the roasted beans.

3,595,669

INSTANT COFFEE PRODUCT

Rudolf G. K. Strobel, Colerain Township, Hamilton County, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

No Drawing. Filed Nov. 25, 1968, Ser. No. 778,758
Int. Cl. A23f *1/08*
U.S. Cl. 99—71 **11 Claims**

Chelating agents are used as anti-scum and anti-foam additives for instant coffee. The chelating agents complex free polyvalent metal ions found in instant coffee dry components as well as the water used for reconstitution and thereby eliminate coffee cup scum and foam.

3,595,670

PROCESS FOR ALTERING THE MOISTURE ABSORPTIVE CHARACTERISTICS OF READY-TO-EAT BREAKFAST CEREAL

John F. Maloney, Jr., and Theodore W. Craig, Minneapolis, Minn., assignors to General Mills, Inc.

No Drawing. Filed July 31, 1968, Ser. No. 748,914
Int. Cl. A23l *1/10*
U.S. Cl. 99—83 **6 Claims**

A process for the treatment of a ready-to-eat breakfast cereal which comprises the addition of hydrophobic siliceous materials to the surface of the ready-to-eat breakfast cereal. The presence of hydrophobic siliceous materials on the surface of a ready-to-eat breakfast cereal will slow the absorption of milk, water or the like, by the breakfast cereal.

3,595,671

CONTINUOUS DOUGH-MAKING PROCESS AND COMPOSITIONS FOR USE THEREIN

Alfred Cooke and Harold G. P. Johannson, Montreal, Quebec, and Jacques R. Rolland, Longueuil, Quebec, Canada, assignors to Delmar Chemicals Limited, Ville La Salle, Quebec, Canada

Filed Feb. 11, 1970, Ser. No. 10,462
Int. Cl. A21d *2/28, 2/22, 2/04*
U.S. Cl. 99—91 **14 Claims**

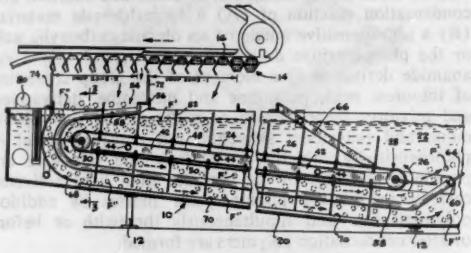
In a high-speed, continuous dough-making process, the need to prepare a conventional liquid fermentation brew is eliminated by including in the dough formula a prepared bakery additive composition containing defined amounts of a food grade sulfhydryl-containing reducing agent, a food grade antioxidant and an oxidizing improver. This substantially reduces the overall time required for the preparation of yeast-leavened products by an improved continuous dough-making process using standard continuous dough-making equipment in a much shorter time, and with greater flexibility and convenience than hitherto.

3,595,672

METHOD OF TREATING STRANDS OF SAUSAGE PRODUCTS

Miles S. Bajcar, Chicago, Ditlev Peder Madsen, Palos Park, and Vincent S. Sondej, Chicago, Ill., assignors to Chemetron Corporation, Chicago, Ill.

Original application Oct. 25, 1967, Ser. No. 678,011, now Patent No. 3,482,508, dated Dec. 9, 1969. Divided and this application May 27, 1969, Ser. No. 842,763
Int. Cl. A22c *11/00*
U.S. Cl. 99—109 **1 Claim**



Apparatus having a grid which partialy encircles a conveyor carrying spaced rows of pins that extend above and pass through the grid for positively moving discrete portions of a product through a treatment bath.

3,595,673

HARD BUTTER COMPRISING RANDOMLY ESTERIFIED TRIGLYCERIDES OF C_{12} AND C_{16-18} FATTY ACIDS

Paul Seiden, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

No Drawing. Filed Sept. 12, 1968, Ser. No. 759,530
Int. Cl. A23d *5/00*; C11c *3/02*
U.S. Cl. 99—118 **3 Claims**

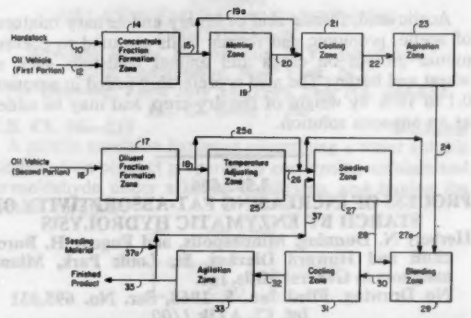
Hard butter comprising randomly esterified triglycerides containing certain amounts of C_{12} and C_{16-18} fatty acids exhibits an extremely rapid change in solids content at temperatures downward of its complete melting point.

3,595,674

METHOD OF PREPARING A LIQUID SHORTENING

John R. Shaffer, Cincinnati, and Eddy R. Hair, Colerain Township, Hamilton County, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Dec. 16, 1968, Ser. No. 784,042
Int. Cl. A23d *5/00*
U.S. Cl. 99—118 **10 Claims**



An exceptionally stable liquid shortening suitable for use in continuous bread making, crouton making, and

doughnut frying is produced by a novel method. The method comprises forming concentrate and diluent fractions, separately processing each of these fractions, blending the processed fractions, and then processing the blend.

3,595,675
GELATIN COMPOSITION
Kenneth Owen Ash, Minneapolis, and George Christianson, Wayzata, Minn., assignors to General Mills, Inc.
Filed Nov. 21, 1966, Ser. No. 595,628
Int. Cl. A23l *1/04*
U.S. Cl. 99—130 8 Claims

Compositions comprising cold water soluble gelatin particles and spun sugar particles with the sugar particles being present in an amount of at least about two parts by weight for each part of the gelatin particles.

3,595,676
GELLING AGENT AND METHOD OF MAKING AND USING THE SAME
Arnold Langen, Haus Etzweiler, and Henry Thiele, Wevelinghoven, Germany, assignors to Pfeifer & Langen, Cologne, Germany
Filed May 25, 1966, Ser. No. 552,839
Claims priority, application Germany, May 26, 1965, P 36,893; Dec. 1, 1965, P 38,243
Int. Cl. A23l *1/04*
U.S. Cl. 99—132 9 Claims

Preparing a granular composition suitable for making jams and jellies by finely grinding together equal portions of pectin and sugar, admixing this finely ground mixture with large wet sugar granules until the surfaces of the large sugar granules are coated with the finely ground pectin-sugar mixture. Fruit acid and powder may also be added along with the pectin-sugar mixture.

3,595,677
PROCESS FOR PRODUCTION OF CALCIUM 5'-NUCLEOTIDE ADDED FOOD
Emiko Hasegawa, Yono-shi, and Itaru Fukinbara and Taneo Nobukuni, Tokyo, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha
No Drawing. Filed June 27, 1967, Ser. No. 649,147
Claims priority, application Japan, July 1, 1966, 41/42,390; Dec. 9, 1966, 41/80,343
Int. Cl. A23l *1/22*
U.S. Cl. 99—140 11 Claims

A method of enhancing the flavor of food products containing phosphatase comprising admixing with said food at least one calcium salt of a 5'-nucleotide that has a particle size between 50 and 200 mesh and heat treating the mixture to deactivate the phosphatase contained therein, said heat treatment effecting dissolution of said salts whereby said salts remain substantially undecomposed by phosphatase in the food prior to said heat treatment.

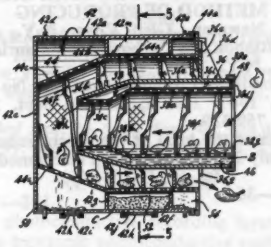
3,595,678
METHOD OF STABILIZING MAILLARD REACTION PRODUCTS
Hideo Shimazaki and Shuji Tsukamoto, Kanagawa-ken, and Yasushi Komata, Tokyo, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan
No Drawing. Filed Dec. 23, 1968, Ser. No. 786,462
Claims priority, application Japan, Dec. 27, 1967, 42/83,843
Int. Cl. A23l *1/26*
U.S. Cl. 99—140 4 Claims

The product of a Maillard reaction between an amino acid and a hexose or pentose is stabilized by hydrogenation under conditions severe enough to remove aldehyde groups without impairing the flavor or color of the product which make it suitable for use as a food additive.

3,595,679
TREATMENT OF BACON BELLIES
Walter S. Schoch, Western Springs, and Reese G. Lewis, Itasca, Ill., assignors to Armour and Company, Chicago, Ill.
No Drawing. Continuation of application Ser. No. 590,463, Oct. 31, 1966. This application Jan. 15, 1970, Ser. No. 4,169
Int. Cl. A23b *1/00, 1/04*
U.S. Cl. 99—159 4 Claims

An improved process for preparing sliced bacon comprising the steps of curing and smoking bacon bellies in the presence of an edible polyphosphoric acid salt of an alkali metal, controlling the moisture content of the bellies so that the smoked and chilled weight thereof is less than about 103% of their green weight, and then slicing the bellies with a high-speed rotary slicing blade operating at a speed between 800–1400 revolutions per minute.

3,595,680
MACHINE AND METHOD FOR COATING FOOD PRODUCTS
Leonard G. Fischer, College Point, Harold B. Kaufman, Jr., New York, and John P. McCarthy, College Point, N.Y., assignors to DCA Food Industries, Inc., New York, N.Y.
Filed May 8, 1969, Ser. No. 822,946
Int. Cl. A23b *1/10*
U.S. Cl. 99—166 33 Claims



A machine and method for battering and then breading food products wherein the machine comprises a rotary drum which includes a battering unit and a breading unit arranged coaxially with each other, with the input end of the battering unit and the output end of the breading unit being arranged at the same end of the rotary drum, such that the feed of the food product and the delivery of the battered and breaded food product is at the same end of the drum and wherein the rotary drum turns about a drum axis to progressively advance the food product through the battering unit and then through the breading unit.

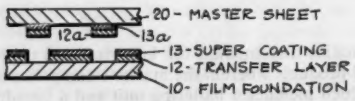
3,595,681
MICROBIAL STABILIZATION PROCESS FOR PRODUCE AND PRODUCT
Milton Kaplow, White Plains, and Joseph Halik, Yonkers, N.Y., assignors to General Foods Corporation, White Plains, N.Y.
No Drawing. Filed Nov. 22, 1967, Ser. No. 684,952
Int. Cl. A23b *7/02, 1/04*
U.S. Cl. 99—199 11 Claims

Microbial stabilization of produce is effected by the infusion of dehydrated produce having a moisture content of less than 20% with an aqueous polyhydric alcohol solution whereby the moisture level of the produce is increased to 20–40% and the polyhydric alcohol is caused to be present therein at a level of at least 5% of the total water soluble compounds present.

3,595,682
PROCESS FOR PREPARING A SMOKED BONELESS TURKEY ROLL
Jack H. Lind and Henry M. Abrahamson, both of Aneta, N. Dak. 58212
Filed Aug. 28, 1968, Ser. No. 755,847
Int. Cl. A23b *1/04*; A22c *21/00*
U.S. Cl. 99—229 4 Claims

A process for preparing a smoked, boneless, fully cooked ready to eat turkey roll which permits forming the roll using the turkey skin for a natural outer casing. The roll is held in a stretchable net during the cooking and smoking, but the net can be removed before sale.

3,595,683
PRESSURE SENSITIVE TRANSFER SHEET AND METHOD OF PRODUCING
Douglas A. Newman, Glen Cove, N.Y., assignor to Columbia Ribbon and Carbon Manufacturing Co., Inc., Glen Cove, N.Y.
Continuation-in-part of application Ser. No. 677,539, Oct. 24, 1967. This application Sept. 12, 1968, Ser. No. 759,329
The portion of the term of the patent subsequent to July 29, 1986, has been disclaimed
Int. Cl. B41m *5/10*
U.S. Cl. 117—36.4 10 Claims



Process for producing novel transfer sheets having a flexible foundation carrying a pressure-transferable porous ink layer comprising a resinous binder material having dispersed therein a large amount of a porous filler and an incompatible liquid ink. The foundation has a smooth plastic release surface and the porous ink layer has thereon a frangible supercoating whereby the porous ink layer is rendered transferable under the effects of impact pressure to form squeeze-out type duplicating images on a master sheet.

3,595,684
ELECTROLESS COPPER PLATING
John L. Morico, North Haven, and Howard W. Pender, Wolcott, Conn., assignors to Enthone, Incorporated, New Haven, Conn.
No Drawing. Filed June 27, 1968, Ser. No. 740,486
Int. Cl. B44d *1/092*; C23c *3/02*
U.S. Cl. 117—47 14 Claims

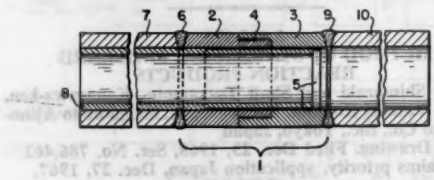
A chemical reduction copper plating solution of improved stability comprising copper ions, formaldehyde as reducing agent for the copper ions, Rochelle salt is complexing agent for the copper ions, sodium hydroxide or potassium hydroxide, and additional methanol in amount to provide an excess of methanol sufficient to shift the equilibrium of a Cannizzaro side reaction in the direction of the reactants, the solution being free of an amine such as triethanolamine. By reason of (1) the excess of methanol sufficient to shift the equilibrium of the Cannizzaro reaction to the left, (2) Rochelle salt as complexer for the ionic copper and which appears to form a weaker complex with the ionic copper than EDTA, and (3) the absence of an amine such as triethanolamine or diethylamine from the solution and which is present in prior art electroless copper solutions, electroless copper plating solutions are provided of considerably longer life than those of the prior art and which effectively plate copper at materially lower solution temperatures than the temperatures required by the prior art electroless copper plating solutions.

3,595,685
METHOD FOR PREPARING SUEDE-LIKE MATERIAL
Tosaku Maeda, Sadao Fujii, and Takeshi Nakamura, Kyoto, Japan, assignors to Nippon Cloth Industry Co., Ltd., Ukyo-ku, Kyoto, Japan
No Drawing. Filed Dec. 27, 1968, Ser. No. 787,611
Int. Cl. B44d *1/44*; D06n *3/04*
U.S. Cl. 117—63 4 Claims

A suede-like material is prepared by coating a fibrous substrate with a mixture consisting of a synthetic polymer having a hardness of 75 to 95, a solvent for said polymer miscible with water, and 0.5 to 7 parts by weight of non-deliqueseceable 50–400 mesh powders soluble in water but insoluble in the said solvent, per one part of said synthetic polymer, exposing the coated substrate to a high moisture atmosphere to coagulate the polymer, dipping the fibrous substrate into water to extract the solvent and powders from the coated film and buffing the surface of the film with a buffing machine.

The present suede-like material is water washable and has a moisture permeability, and no fingerprints are left on the surface of the material.

3,595,686
COATING A PIECE OF STEEL AND A PIECE COMPRISING ZIRCONIUM
Marcel Armand, Michel Charveriat, and Jean-Pierre Givord, Albertville, France, assignors to Ugine Kuhlmann, Paris, France
Filed Dec. 19, 1968, Ser. No. 785,175
Int. Cl. B44d *1/06*
U.S. Cl. 117—71 2 Claims



A hydrogen resistant junction between pieces of zirconium or zirconium alloys and pieces of steel and a method of making same. The exposed surfaces adjacent the junction are coated with an alloy consisting essentially of Al, Si, Fe, Zr and alloying metals. The compatibility

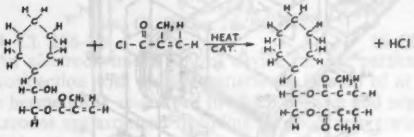
of the alloy with both the zirconium or zirconium alloy piece and the steel piece enables the coating to be continuous and adherent to both.

3,595,687

DIVINYL COMPOUNDS FROM MONOEPOXIDES AND PAINTING PROCESS

Santokh Labana, Dearborn Heights, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Aug. 4, 1969, Ser. No. 865,543
Int. Cl. B44d 1/50; C07c 69/52; C08f 1/24
U.S. Cl. 117—93.31 21 Claims



A substrate is coated with a film-forming composition consisting essentially of vinyl monomers and a unique divinyl compound and the coating is converted to a tenaciously adhering, solvent-resistant, wear and weather-resistant coating by exposing the coated substrate to ionizing radiation, preferably in the form of an electron beam. This divinyl compound is formed by first reacting a monoepoxide with acrylic acid and methacrylic acid and subsequently reacting the resultant ester condensation product with a vinyl unsaturated acyl halide.

3,595,688

THERMALLY STABILIZED CELLULOSE MATERIAL PRODUCED BY TREATING CELLULOSE WITH MELAMINE IN COMBINATION WITH DIGLYCOLAMINE, DIMETHYL FORMAMIDE OR PIPERAZINE

Fred S. Sadler, Racine, Wis., assignor to McGraw-Edison Company, Milwaukee, Wis.

No Drawing. Filed Mar. 27, 1969, Ser. No. 811,215
Int. Cl. H01b 3/50, 3/52
U.S. Cl. 117—136 10 Claims

A cellulose fiber material having improved thermal stability. The cellulose fiber material is treated with the combination of melamine and a compound selected from the group consisting of diglycolamine, piperazine, and dimethyl formamide. Treatment with this combination of ingredients enables the cellulose fibers to withstand deterioration by the action of heat over extended periods of time. The cellulose fiber material having improved thermal stability is useful as an insulator in electrical apparatus.

3,595,689

SUBSTRATE TREATED WITH A FLUORINE-CONTAINING AROMATIC COMPOUND

Everett E. Gilbert, Morristown, N.J., Jack L. Herz, Syracuse, N.Y., and John J. Murray, Stirling, Alson K. Price, Morristown Township, and Richard F. Sweeney, Randolph Township, Morris County, N.J., assignors to Allied Chemical Corporation, New York, N.Y.

No Drawing. Filed Apr. 1, 1968, Ser. No. 717,981
Int. Cl. D06m 15/00
U.S. Cl. 117—121 18 Claims

This specification discloses novel aromatic compositions containing two fluoroalkyl substituents each containing at least four perfluorinated carbon atoms. These compositions are prepared by reacting a phenylene diamine, aminophenol or dihydroxybenzene, substituted or unsubstituted, with a polyfluoroalkyl carboxylic acid or a polyfluoroalkoxyalkyl carboxylic acid, or the corresponding acid halide, ester or anhydride of these acids. The novel compositions of the invention are useful as oil repellent coatings and sizes, particularly for textiles.

3,595,690

LEAD SULFIDE PHOTOCONDUCTIVE CELLS

Raymond Cooperstein, Cincinnati, Ohio, assignor to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Sept. 19, 1957, Ser. No. 685,780
Int. Cl. G03c 3/26, 1/00; H05k 3/00
U.S. Cl. 117—211 7 Claims

1. The method of forming a photosensitive layer of lead sulfide crystals which comprises precipitating the crystals onto a glass support by adding a solution of thiourea to an alkali metal hydroxide solution of a lead salt, one of the solutions containing a water soluble manganese salt selected from the group consisting of manganese acetate, manganese nitrate, and manganese chloride, the lead salt being a water soluble salt selected from the group consisting of lead nitrate, lead acetate, lead chlorate and lead perchlorate, the concentrations in the solutions when first combined being as follows: lead between .05 and .06 molar, manganese between 5×10^{-5} and 5×10^{-4} molar thiourea between 0.15 and 0.3 molar, and hydroxide between .55 and .75 molar, immersing the glass support in the combined solutions to receive precipitated crystals of lead sulfide and then drying the surface.

3,595,691

PREPARATION OF PHOTOCONDUCTIVE RECORDING MATERIALS

Karel Eugeen Verhille and Robert Joseph Noe, Mortsel, Belgium, assignors to Gevaert-Agfa N.V., Mortsel, Belgium

Filed Apr. 26, 1968, Ser. No. 724,459
Claims priority, application Great Britain, Apr. 26, 1967, 19,186/67
Int. Cl. G03g 5/00
U.S. Cl. 117—201 17 Claims

A porous photoconductive recording layer is obtained by dispersing inorganic photoconductive particles such as photoconductive zinc oxide in an organic solvent solution having dissolved therein a mixture of polymeric binding agents for the photoconductive particles which includes at least two polymers which are both insoluble in water at pH 7, are soluble to different extents, i.e., differentially soluble in the organic solvent solution, form a clear solution without noticeable turbidity when so dissolved, and are mutually insoluble in one another when in the solid state; coating the resultant dispersion on an appropriate support; drying the coating at a rate sufficient to precipitate at least a portion of one polymer prior to the precipitation of the other polymer; and then completing the drying of the coating. As a result of the preferential precipitation of the lesser soluble polymer, there results a dried coating structure containing random interconnecting microscopic cavities.

3,595,692

TELEPHONE CABLE HAVING APPLIED THERETO A TACKY SQUIRREL REPELLENT WHOSE ADHESIVE TACK EXCEEDS ITS COHESIVE TACK

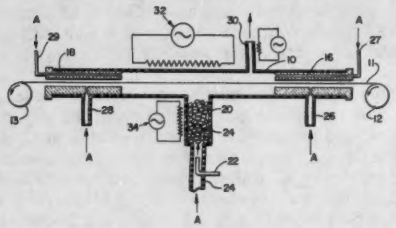
Oliver B. Gerrish, Kansas City, Mo., assignor to Southwestern Bell Telephone Company

No Drawing. Filed Apr. 24, 1967, Ser. No. 632,896
Int. Cl. B44d 1/16, 1/42; H01b 3/30
U.S. Cl. 117—218 2 Claims

Protection of things from damage by squirrels, and other rodents, by coating the things with a sticky substance which, when stepped on by a squirrel, has insufficient cohesiveness to prevent the squirrel from freeing itself, but

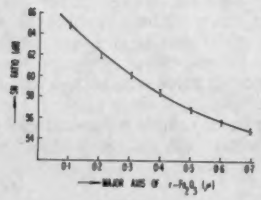
nevertheless sticks to the squirrel's tissue after he has freed himself, thereby teaching the squirrel to avoid all such things.

3,595,693
PROCESS FOR PRODUCING STABILIZED NIOBIUM-TIN SUPERCONDUCTOR
Peter C. Cecil, Holliston, Daniel F. Fairbanks, Winchester, and Daniel A. Reisner, Brockton, Mass., assignors to Norton Company
Filed Jan. 8, 1968, Ser. No. 696,468
Int. Cl. C23c *11/08, 17/12*
U.S. Cl. 117—227 6 Claims



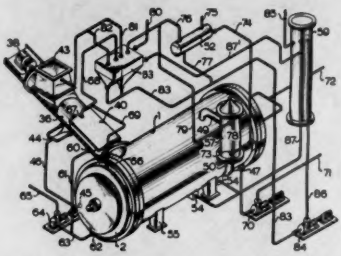
Superconductor, such as wire or strip, is coated with a thin strike coat of copper or other normal conductor metal, less than 50 microinches thick, by displacement reaction and then overcoated with normal conductor metal to stabilize the superconductor to produce a product characterized by highly adherent coating bond and to ease the problems of producing stabilized coatings on superconductors, particularly high field hard superconductors, such as niobium-tin.

3,595,694
MAGNETIC RECORDING TAPE
Norio Akai and Tomizo Taniguchi, Ibaraki-shi, Japan, assignors to Hitachi Maxell, Ltd., Osaka-fu, Japan
Filed Sept. 17, 1968, Ser. No. 760,233
Claims priority, application Japan, Sept. 18, 1968, 42/60,034
Int. Cl. H01f *10/02*
U.S. Cl. 117—235 3 Claims



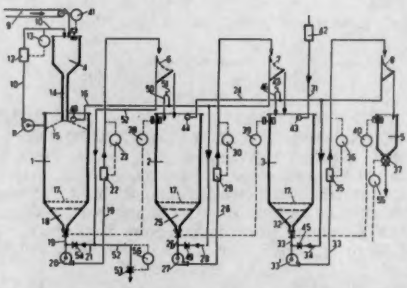
In a magnetic recording tape comprising a base film and a magnetic layer provided thereon, the improvement wherein the thickness of the base film and of the magnetic layer are respectively 38 to 42 microns and 12 to 8 microns, the magnetic material in the magnetic layer being needle-shape γ-Fe_2O_3 of 270 to 350 oersteds in coersive force, 0.1 to 0.3 micron in major axis length and 5 to 7 in major axis/minor axis ratio and the packing density of the magnetic material being not less than 1.7 g./cm.^{3}. The noise and the print effect in the magnetic recording tape are much reduced.

3,595,695
METHOD AND APPARATUS FOR TREATING SUGAR BEET CHIPS
Eugen Langen and Heinrich Weddecke, Grevenbroich, Germany, assignors to Maschinenfabrik Buckau R. Wolf Aktiengesellschaft, Grevenbroich, Germany
Filed Dec. 4, 1969, Ser. No. 882,099
Claims priority, application Germany, Dec. 5, 1969, P 18 12 953.8
Int. Cl. B01d *11/02, 19/02;* C13d *1/12*
U.S. Cl. 127—5 22 Claims



A stream of sugar beet chips is advanced from one end towards the other end of a substantially horizontal enclosed vessel. Air entrapped in the stream is withdrawn before it enters the vessel. A stream of sugar beet juice at elevated temperature is advanced through the vessel in counterflow to the stream of chips to thereby produce in the region of the upstream end of the vessel a counterflow zone. Intermediate this counterflow zone and the downstream end of the vessel chips and juice are continuously withdrawn and readmitted into the two streams to thereby produce a cross-current flow therein. In the same region additional sugar beet juice also at elevated temperature is admitted in cross-current flow. In the region of the downstream end of the vessel the treated chips, together with some of the incoming sugar beet juice, are withdrawn in form of a pumpable mixture or slurry.

3,595,696
CORN STEEPING PROCESS AND APPARATUS
Herman J. Vegter, Santpoort, Netherlands, assignor to Honig N.V., Netherlands
Filed Mar. 3, 1969, Ser. No. 803,893
Int. Cl. C13l *1/02*
U.S. Cl. 127—23 11 Claims



Corn and steeping liquor are continuously passed in opposite senses through a number of reaction vessels connected in series. In each vessel, the flow of corn and

liquor is concurrent. A corn-liquor mixture leaving each vessel is screened outside that vessel, whereupon the separated corn is passed to a next reaction vessel and the separated liquor to the preceeding reaction vessel.

3,595,697

HERMETICALLY SEALED ELECTRIC BATTERY COMPRISING HERMETICALLY SEALED ELECTROCHEMICAL CONTROL CELL

Siegfried Dickfeldt, Hagen, Lutz Horn, Erlangen, and Freimut Peters, Hagen, Germany, assignors to Varta Aktiengesellschaft, Frankfurt am Main, Germany

Continuation of application Ser. No. 645,301, June 12, 1967. This application Apr. 30, 1970, Ser. No. 31,844
Claims priority, application Germany, June 15, 1966, V 31,253
Int. Cl. H01m *35/00, 43/04*
U.S. Cl. 136—6 10 Claims

An electrochemical control device for use particularly in connection with storage batteries is formed of at least one hermetically sealed cell in which positive and negative electrodes are arranged including identical active mass so that the electrodes are of potentially changeable opposite polarity, whereby at the time of starting operation, the amount of reduceable material in the active mass of the electrode serving as cathode, measured in electrochemical equivalents, is greater than the amount of oxidizable material in the active mass of the electrode serving as anode, and wherein up to 40% of the combined amount of the active masses of the cathode and the anode, measured in electrochemical equivalents, is in reduced condition.

3,595,698

HYDRAZINE FUEL CELL WITH ACRYLIC ACID POLYMER MEMBRANE

Karl Victor Kordesch, Lakewood, Ohio, assignor to Union Carbide Corporation, New York, N.Y.

No Drawing. Filed Oct. 3, 1968, Ser. No. 764,965
Int. Cl. H01m *27/26*
U.S. Cl. 136—86 5 Claims

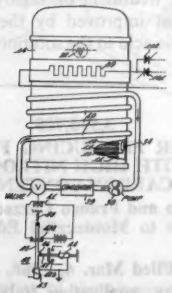
Alkali metal salts of ethylene-acrylic acid copolymers are useful as selective, ion permeable membranes for permeable membranes for hydrazine-air fuel cells and permit operation of the cell at high fuel concentrations.

3,595,699

FUEL CELL TEMPERATURE CONTROL

John Baude, Milwaukee, Wis., assignor to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.

Filed Feb. 13, 1969, Ser. No. 798,933
Int. Cl. H01m *27/12*
U.S. Cl. 136—86B 18 Claims



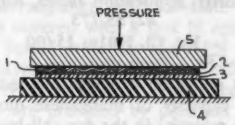
The invention comprises a fuel cell temperature control which anticipates heating by internal losses generated as a result of fuel cell load current variation and initiates cooling in advance of the actual time the temperature rise is sensed by the temperature detecting means. A differential amplifier receives a first input signal which is a function of the rate of change of fuel cell current and time and a second input signal which is a fuction of fuel cell temperature, and means responsive to the output from the differential amplifier regulate the flow of coolant through a heat exchanger in heat transfer relation with the fuel cell.

3,595,700

METHOD OF MAKING ELECTRODE

Martin G. Rosansky, Forest Hills, N.Y., assignor to Leesona Corporation, Warwick, R.I.

Filed Mar. 30, 1967, Ser. No. 627,215
Int. Cl. H01m *13/00;* B29c *15/00*
U.S. Cl. 136—120 10 Claims



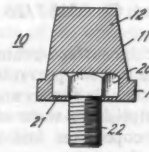
An improved method of assembling a lightweight electrode for disposition in an electrochemical cell and the resultant electrode is described. The method comprises applying a coating of catalyst to a continuous plastic membrane and pressing the coated film onto a metal grid by means of a pressure plate in contact with and bearing on the metal grid while the uncoated surface of the film is positioned on a resilient mat. As a result, the film and catalyst are firmly anchored to the grid with controlled distortion of the film.

3,595,701

STORAGE BATTERY CONNECTOR

Jack R. Lewis and John H. Dare, Norristown, Pa., assignors to Keystone Cable Corporation, Philadelphia, Pa.

Filed Aug. 20, 1969, Ser. No. 851,585
Int. Cl. H01m *5/00*
U.S. Cl. 136—135R 3 Claims



A storage battery connector is provided having a body section with a tapered post, a polygonal central section for wrench engagement and a stud having an exposed threaded end and a concealed head which strengthens the body section.

3,595,702

ACTIVE MASS FOR GALVANIC ELEMENTS AND PROCESS OF MAKING THE SAME

Winfried Krey, Neunheim, Aalen, Germany, assignor to Varta Gesellschaft mit beschrankter Haftung, Ellwangen (Jagst), Germany

No Drawing. Filed July 15, 1969, Ser. No. 842,094
Claims priority, application Germany, July 16, 1968, P 17 71 815.9
Int. Cl. H01m *15/06, 9/00*
U.S. Cl. 136—137 14 Claims

An active depolarizer-electrolyte mass for primary cells is formed by distributing a polyelectrolyte in the carbon

black- or graphite-containing depolarizer mass and then precipitating and cross-linking the polyelectrolyte by addition of polyvalent metal ions or hydrogen ions containing principal electrolyte. The composition permits setting up of the active mass without jeopardizing its consistency by too much or too little stirring, thus resulting in an improvement of the moldability into desired shapes of the mass.

3,595,703

METHODS OF IMPROVING THE DISCHARGE CAPACITY OF MANGANESE DIOXIDE USED IN THE CELL

Kazuhide Miyazaki and Michiaki Yamamoto, Tokyo, Japan, assignors to Mitsui Mining & Smelting Co., Ltd.

Filed Jan. 22, 1969, Ser. No. 793,072
Claims priority, application Japan, Aug. 17, 1968, 43/58,773
Int. Cl. H01m *15/00*
U.S. Cl. 136—138 **10 Claims**

The present invention provides methods of improving the discharge capacity of manganese dioxide used as a cathode active material in the dry cell by contacting said manganese dioxide with a carbamate. According to the methods provided in this invention, the discharge duration of a given quantity of manganese dioxide when used in the cell can be improved by means of simple measures and at a slight cost. The cell voltage of the dry cell using manganese dioxide prepared according to this invention accordingly drops off to a lesser extent during discharge, therefore the discharge capacity is increased and the service life of the cell is remarkably lengthened.

3,595,704

COMPOSITION FOR THE SURFACE-TREATING OF METALS

Shozo Matsuda, Tadashi Tanaka, and Katushi Saitoh, Kawasaki, and Saburo Ayusawa, Kitakyushu, Japan, assignors to Yawata Iron & Steel Co., Ltd., Tokyo, Japan

No Drawing. Filed Dec. 20, 1968, Ser. No. 785,770
Claims priority, application Japan, Dec. 23, 1967, 42/82,534
Int. Cl. C23f *7/26*
U.S. Cl. 148—6.2 **12 Claims**

A composition for the surface-treatment of metals such as Fe, Zn, Sn and the like for preventing the metals from rusting, particularly suitable for an undercoating of paint, said composition comprising a water-soluble solution containing maleic acid copolymer and water-soluble chromium compound as the main components, wherein particularly polystyrene maleic acid copolymer is selected as the maleic acid copolymer, thereby to obtain the stability of the bath and to prevent the appearance of the film from turning black.

3,595,705

COPPER-BORON-SULFUR ALLOY AND METHOD OF TREATMENT

Robert S. Bray, Cheshire, Conn., assignor to Anaconda American Brass Company

Continuation-in-part of abandoned application Ser. No. 613,460, Feb. 2, 1967. This application June 13, 1969, Ser. No. 832,977
Int. Cl. C22f *1/08*
U.S. Cl. 148—11.5 **6 Claims**

A copper boron sulfur alloy containing minor amounts of boron and sulfur is provided by this invention. When this high conductivity alloy is solution annealed, rapidly cooled to room temperature and subsequently cold worked, it has a high softening temperature.

3,595,706

FORGED FINE CARBIDE ANTI-FRICTION BEARING COMPONENT MANUFACTURE

Richard L. Faunce and William M. Justusson, Farmington, Mich., assignors to Ford Motor Company, Dearborn, Mich.

No Drawing. Filed June 9, 1969, Ser. No. 831,735
Int. Cl. C21d *7/14, 9/40*
U.S. Cl. 148—12.3 **8 Claims**

This invention relates to a process for the manufacture of races for anti-friction bearings by a forging process and a thermal treatment that results in the production of a metallurgical structure characterized by uniformly distributed primary carbides ranging downward in size from one micron with the bulk of such carbides measuring between one half and one micron.

3,595,707

FORGED ANTI-FRICTION BEARING COMPONENT MANUFACTURE

Richard L. Faunce and William M. Justusson, Farmington, Mich., assignors to Ford Motor Company, Dearborn, Mich.

No Drawing. Filed June 9, 1969, Ser. No. 831,736
Int. Cl. C21d *7/14, 9/40*
U.S. Cl. 148—12.3 **8 Claims**

This invention relates to a process for the manufacture of races for anti-friction bearings by a forging process and a thermal treatment that results in the production of a metallurgical structure characterized by uniformly distributed carbides ranging in size from two to five microns.

3,595,708

PROCESS FOR SURFACE TREATMENT OF IRON AND ITS ALLOYS

Hargovind N. Vazirani, Passaic Township, Morris County, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 12, 1968, Ser. No. 774,930
Int. Cl. C23f *7/10*
U.S. Cl. 148—6.15 **8 Claims**

Treating the surface of iron and its alloys with an aqueous solution containing bromide ions or iodide ions and phosphoric acid results in improved surface for adhesive joining and for coating with organic finishes. Effectiveness of the treatment on highly corrosion resistant steels is somewhat improved by the addition of minor amounts of sulfuric acid to the solution.

3,595,709

PROCESS FOR PRODUCING FERROCHROME ALLOYS WITH HIGH NITROGEN CONTENT AND LOW CARBON CONTENT

Giovanni Sordillo and Franco Cazzaro, Salzano, Venice, Italy, assignors to Montecatini Edison S.p.A., Milan, Italy

No Drawing. Filed Mar. 4, 1968, Ser. No. 709,892
Claims priority, application Italy, Mar. 7, 1967, 13,446/67
Int. Cl. C21d *5/10*; C22c *39/14*
U.S. Cl. 148—16 **7 Claims**

Ferrochrome alloys high in nitrogen (which may be as high as about 15%) and low in carbon (which may be as

low as about 0.3%) are made by treating pulverized ferrochrome up to 8% in carbon with a stream of gas comprising ammonia at temperatures of the order of about 500° to 800° C. The gas treatment may be carried out by the fixed bed method or the fluidized bed method.

3,595,710
EROSION RESISTANT DISPERSION HARDENED METALS

John B. Lambert, Towson, and Harold G. Marsh, Severna Park, Md., assignors to Fansteel Inc., Chicago, Ill.

No Drawing. Filed Oct. 25, 1968, Ser. No. 770,821
Int. Cl. C22c *19/00*
U.S. Cl. 148—31 **6 Claims**

Dispersion hardened metals based on nickel or cobalt containing a small proportion of nickel and chromium are modified to improve high temperature erosion resistance by the inclusion of a large proportion of iron.

3,595,711
ANTIFRICTION BEARING COMPONENT MANUFACTURE

Richard L. Faunce and William M. Justusson, Farmington, Mich., assignors to Ford Motor Company, Dearborn, Mich.

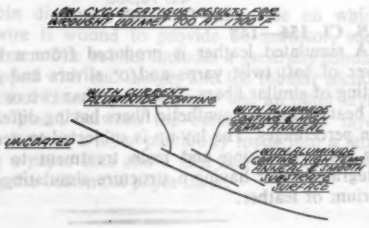
No Drawing. Filed June 9, 1969, Ser. No. 831,737
Int. Cl. C21d *1/00*
U.S. Cl. 148—144 **8 Claims**

This invention relates to a process for the production of ball bearing inner races from rolled tubing. This rolled tubing is heat treated to produce a carbide particle size of one half to one micron. This very fine carbide particle size resulted in an inner bearing race life exhibiting a B–10 life 2.8 times that of inner bearing races with conventional, larger carbide particles.

3,595,712
PROCESSING OF ALUMINIDE-COATED NICKEL-BASE SUPERALLOYS

Donald H. Boone, North Haven, Cornelius P. Sullivan, Branford, and Clifford H. Wells, Clinton, Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed Oct. 8, 1968, Ser. No. 765,777
Int. Cl. B23p *15/00*; C21d *1/00*
U.S. Cl. 148—162 **8 Claims**



The fatigue properties of the aluminide-coated nickel-base superalloys, particularly in gas turbine engine applications, are improved by processing the coated article to decrease the brittleness of the coating, particularly through the use of a high temperature anneal between the coating and the substrate precipitation heat treatments. Concurrently, the overall coating process offers increased simplicity of processing with consequent economic advantages.

3,595,713
METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE COMPRISING COMPLEMENTARY TRANSISTORS

Michel de Brébisson, Jean-Claude Frouin, and Jacques Thire, Caen, France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed July 1, 1968, Ser. No. 741,391
Claims priority, application France, June 30, 1967, 112,632
Int. Cl. H01l *7/36, 7/44*
U.S. Cl. 148—175 **5 Claims**

A method of making an integrated circuit containing NPN and complementary PNP transistors is described. In a preferred arrangement, a P substrate without active buried layers is covered with a first N epitaxial layer in which an N+ buried layer for the NPN transistor and a P+ buried layer for the PNP transistor is provided. Then a second N epitaxial layer is provided. The N emitter and P base are provided by diffusion over the N+ buried layer. The P emitter is provided by diffusion over the P+ buried layer, but the N base is constituted by the second epitaxial layer. The P collector is formed by the buried layer, to which a diffused contact is made. The two buried layers remain spaced from the substrate and the surface. Thus, the PNP transistor is isolated by the first epitaxial layer.

3,595,714
METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE COMPRISING A FIELD-EFFECT TRANSISTOR

Jacques Thire, Caponiere-Caen-Calvados, Michel de Brebisson, Richemond-Caen, and Jean-Claude Frouin, Defense-Passive-Caen, France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed July 1, 1968, Ser. No. 741,730
Claims priority, application France, June 30, 1967, 112,637
Int. Cl. H01l *7/36, 7/44*
U.S. Cl. 148—175 **3 Claims**

A method of making a junction field effect transistor, by steps compatible wtih the planar technology is described. Two epitaxial layers of the same type are deposited on a substrate of the opposite type, with a buried layer of the opposite type provided between the epitaxial layers. The buried layer is maintained spaced from the substrate, to define an isolation zone for the transistor, and spaced from the surface, to define a channel region of the original epitaxial material underneath a diffused gate electrode.

3,595,715
METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE COMPRISING A JUNCTION FIELD-EFFECT TRANSISTOR

Jacques Thiré and René Glaise, Caen-Calvados, France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed July 1, 1968, Ser. No. 741,748
Claims priority, application France, June 30, 1967, 112,635
Int. Cl. H01l *7/36, 7/44*
U.S. Cl. 148—175 **3 Claims**

A method is described for making a junction field effect transistor using two opposite-type buried layers in a substrate, and a single epitaxial layer. The top buried layer forms with a region diffused from the surface a cup-shaped volume constituting a control electrode. The channel, of epitaxial material, is defined by a surface diffusion within the cup. The bottom buried layer isolates the transistor from the substrate.

3,595,716
METHOD OF MANUFACTURING SEMICONDUCTOR DEVICES
John Anthony Kerr, Harrow, and Eric Wadham, Saint Albans, England, assignors to U.S. Philips Corporation, New York, N.Y.
Filed May 28, 1968, Ser. No. 732,626
Claims priority, application Great Britain, May 16, 1968, 24,762/68
Int. Cl. H01l *7/54*
U.S. Cl. 148—187 9 Claims

A method of fabricating a transistor having emitter, base and collect or regions is disclosed. In a first operation there is formed in a semiconductor body part of one conductivity type at one surface thereof a shallow surface emitter region by incorporating therein a relatively high concentration of one-type forming impurities. Next ions of an impurity of the opposite conductivity type are implanted into said body part from said one surface over an area encompassing but larger than the emitter region and to a depth deeper than the emitter region such that the ions extend through the previously made emitter region to form a base region, said base ion impurity concentration exceeding the impurity concentration of the initial body part but being less than the emitter impurity concentration forming an opposite type base region defining spaced collector and emitter junctions which extend to the said one surface. Finally, the assembly is subjected to a base annealing treatment to remove semiconductor ion damage.

3,595,717
EPOXY CURED HYDROCARBON POLYMER PROPELLANT COMPOSITION AND METHOD OF MAKING THE SAME
Robert Dean Lowrey, Hopkins, Minn., and William Edward Hunter, Huntsville, Ala., assignors to Thiokol Chemical Corporation, Trenton, N.J.
No Drawing. Original application Jan. 6, 1958, Ser. No. 707,444. Divided and this application June 20, 1961, Ser. No. 130,441
Int. Cl. C06d *5/06*
U.S. Cl. 149—19 10 Claims

1. A solid combustible composition adapted to be used as a missile propellant comprising a dispersion of a finely divided solid, non-metallic, inorganic oxidizing agent in a rubber-like matrix having a high fuel value, said matrix being essentially an epoxide-cured acrylobutadiene copolymer.

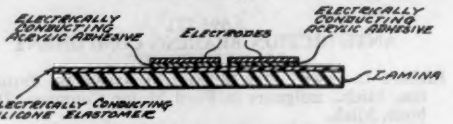
3,595,718
DRY ETCHING SYSTEM WITH INERT PARTICLES COATED WITH ADSORBED ACID
David H. Fishman, West Orange, and Frank M. Berardinelli, South Orange, N.J., assignors to Celanese Corporation, New York, N.Y.
No Drawing. Filed Jan. 22, 1968, Ser. No. 699,369
Int. Cl. C23f *1/00*; B41c *1/00*; B24c *1/08*
U.S. Cl. 156—2 5 Claims

This disclosure refers to or describes certain prior art systems for etching the surface of metals and plastics to form impressions on such surface or to make such surfaces receptive to coatings. Also disclosed herein is a new etching system which is particularly effective for the aforementioned, and other, purposes.

3,595,719
METHOD OF BONDING AN INSULATOR MEMBER TO A PASSIVATING LAYER COVERING A SURFACE OF A SEMICONDUCTOR DEVICE
Daniel I. Pomerantz, Lexington, Mass., assignor to P. R. Mallory & Co., Inc., Indianapolis, Ind.
No Drawing. Filed Nov. 27, 1968, Ser. No. 779,615
Int. Cl. H01l *7/00*
U.S. Cl. 156—17 7 Claims

A process for forming a bond between an insulator member and a passivating layer covering a surface of a semiconductor device by etching the passivating layer to be bonded with an etchant and thereafter bonding the insulator member to the semiconductor device by the application of heat and electric potential thereto.

3,595,720
HEATING ELEMENTS
Jack Ames, Troon, and Thomas Gilmour Graham, Stevenson, Scotland, assignors to Imperial Chemical Industries Limited, London, England
Filed Oct. 9, 1967, Ser. No. 673,949
Claims priority, application Great Britain, Oct. 20, 1966, 46,920/66
Int. Cl. H01b *13/06*
U.S. Cl. 156—51 3 Claims



A process for the production of an electric heating element comprising applying to a coating of an electrically conducting silicone elastomer coated on at least one side of a lamina selected from the group consisting of woven, knitted, felted fabrics and film at least two electrodes coated with an electrically conducting acrylic adhesive and applying pressure whereby said electrodes become firmly attached to the said coating, said electrodes being selected from metal foil, gauze, braid and wire applied to the coating on the same side of the lamina.

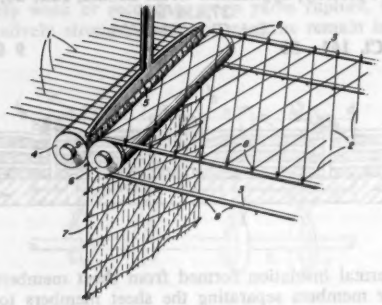
3,595,721
PROCESS FOR MANUFACTURING A LEATHERY MATERIAL
Tatsuji Hamano, Sugano, Ichikawa, Chiba Prefecture, Japan, and Tomohisa Iizuka, Ichikawa-minami, Ichikawa, Chiba Prefecture, Japan
No Drawing. Filed Nov. 17, 1967, Ser. No. 683,775
Claims priority, application Japan, Dec. 1, 1966, 41/78,355
Int. Cl. D04h *13/00*
U.S. Cl. 156—148 11 Claims

A simulated leather is produced from a lay-up of a layer of soft twist yarns and/or slivers and a batt consisting of similar fibers. The lay-up has two or more kinds of heat shrinkable synthetic fibers having different shrinkage percentages. The lay-up is subjected to needle punching, heat shrinking and resin treatment to provide an integrated layer having a structure simulating that of the corium of leather.

3,595,722
PROCESS FOR FORMING A THERMOPLASTIC PRODUCT
Henry D. Dawbarn, Waynesboro, Va., assignor to Thiokol Chemical Corporation, Bristol, Pa.
Original application Apr. 17, 1964, Ser. No. 360,673, now Patent No. 3,445,319. Divided and this application Apr. 2, 1969, Ser. No. 841,641
Int. Cl. B32b *5/00*
U.S. Cl. 156—177 7 Claims

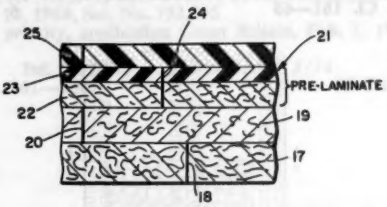
An integral thermoplastic product is provided from a prearranged array of straight, thermoplastic filaments. The filaments, arranged in the same plane, are conveyed

to a compressing zone from two or more directions, and contacted thereat with a molten film of thermoplastic.



The contacted filaments are cooled by quenching and an integral product is formed.

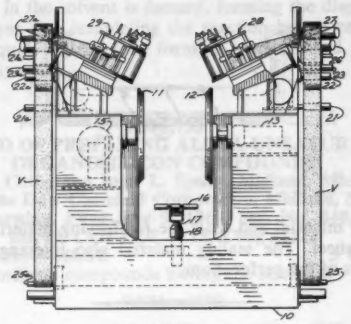
3,595,723
METHOD OF MANUFACTURING BOBBINS
Robert C. Ellis, Kenilworth, Ill., and George A. Young, Bay Village, Ohio, assignors to Precision Paper Tube Company, Wheeling, Ill.
Filed Nov. 6, 1968, Ser. No. 773,730
Int. Cl. B31c; B65h *81/00*
U.S. Cl. 156—190 **3 Claims**



The bobbin disclosed herein is an article on which conductor wire is wound to provide an inductor, such as a transformer. The bobbin includes a generally tubular section equipped with end flanges and the tubular section is constructed of inner layers of paper and an outer layer of film. Interposed between the outermost paper layer and the film layer is a layer previously made into a laminate having a paper face and a film face with the paper face abutting the outermost paper layer.

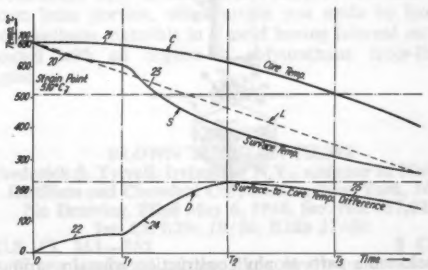
3,595,724
TIRE MATERIAL APPLYING APPARATUS
Jean Leblond, Compiegne, France, assignor to Uniroyal Englebert France S.A., Paris, France
Filed Nov. 6, 1967, Ser. No. 680,730
Claims priority, application France, Mar. 29, 1967, 100,720
Int. Cl. B29h *17/08*
U.S. Cl. 156—405 **15 Claims**

Apparatus for applying a layer of sheet material to a supporting surface. The apparatus applies the leading edge of the sheet material to the supporting surface, rotates the supporting surface a predetermined angular amount to apply trailing portions of the sheet material to a predetermined angular portion of the supporting surface, presses the sheet material onto the rotating supporting surface, and cuts the sheet material in the region



of, but spaced from, the supporting surface, whereafter the trailing edge of the cut sheet material is applied to the supporting surface.

3,595,725
TOUGHENING GLASS IN SHEET FORM
Ernesto Coen, Liverpool, England, assignor to Pilkington Brothers Limited, Liverpool, England
Continuation-in-part of application Ser. No. 530,844, Mar. 1, 1966. This application Apr. 29, 1969, Ser. No. 826,765
Claims priority, application Great Britain, Apr. 4, 1965, 15,285/65
Int. Cl. C03b *27/00*
U.S. Cl. 161—1 **9 Claims**

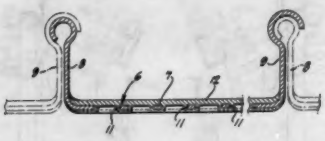


A heated glass article is toughened by a two-stage quenching process in the first stage of which gaseous chilling medium lowers the surface temperature of the glass at a predetermined rate and in the second stage of which a higher rate of flow which continues the chilling is so controlled that there is an overall substantially linear rate of fall of the surface temperature of the glass during the whole of the toughening process.

3,595,726
ROOF LIGHT PANEL
Arthur H. Middleton, 160 Grand View Ave., San Francisco, Calif. 94114
Filed Aug. 21, 1969, Ser. No. 851,834
Int. Cl. E04c *1/42, 2/54*; E04h *5/62*
U.S. Cl. 161—3.5 **5 Claims**

A roof light panel is made up of a trough-like aluminum sheet having upstanding longitudinal edges adapted to interlock with similar adjacent sheets. The bottom of the

panel is perforated. A sheet of translucent fiber glass reinforcing material overlies the perforations. A normally hard, translucent, sealing material envelops the rein-

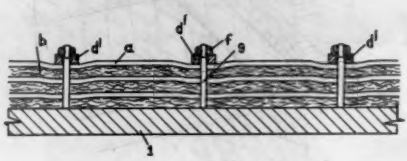


forcing material and seals the reinforcing material to the metal sheet. The sealing material also interengages the margins of the perforations.

3,595,727
MULTIPLE AND SELECTABLE PARTS TROPHY CONSTRUCTION
Dorothy K. Allen, Libertyville, Ill., assignor to F. H. Noble & Company, Chicago, Ill.
Filed Dec. 22, 1967, Ser. No. 692,985
Int. Cl. A63g *33/00*
U.S. Cl. 161—17 **19 Claims**

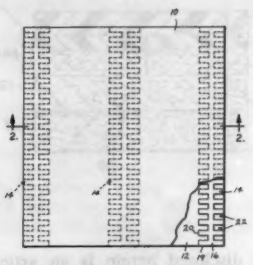
A selectable parts trophy construction wherein various parts of different size and shape may be rapidly and easily secured together in various ways to provide a wide variety of trophy assemblies of different size, shape and appearance. A selected one of a series of trophy body members, which are of different height and shape but which have the same upper and lower end configuration, serves as the primary element of each trophy assembly. An adapter member, adapted to have a figure or the like mounted thereon, is engageable with the upper end of the trophy body member, and another adapter member, adapted to have a wooden trophy base or the like mounted thereon, is engageable with the lower end of the trophy body member. Quick-acting connecting means, carried by each adapter member and the respective ends of the trophy body member, permit rapid assembly and/or disassembly of the trophy parts. Lock means associated with the connecting means prevents unintentional disengagement of the adapter members, and any parts mounted on the adapter members, from the trophy body member after the parts are assembled.

3,595,728
THERMAL INSULATION
Arthur Gray Robson, Knutsford, England, assignor to The Nuclear Power Group Limited, Knutsford, England
Filed June 16, 1967, Ser. No. 646,580
Claims priority, application Great Britain, June 20, 1966, 27,434/66
Int. Cl. B32b *3/06*
U.S. Cl. 161—53 **9 Claims**



Thermal insulation formed from sheet members with spacer members separating the sheet members to form interspaces which are sealed from one another by seals formed by pairs of contacting surfaces at least one surface of each pair being of non-metallic, heat resistant material, the permeability of the spacer members and the compressibility of the non-metallic material being such that the spacer members in conjunction with said seals restrict the flow of fluid in and between the interspaces.

3,595,729
PALLET WHEREIN SPACER MEMBERS ARE FORMED OF RIGID FOAM POLYMERIC MATERIAL
Charles A. Cook, Bristol, Ind., assignor to Engineered Foam Plastics, Inc., Elkhart, Ind.
Filed June 11, 1969, Ser. No. 832,128
Int. Cl. B32b *3/12*
U.S. Cl. 161—69 **6 Claims**

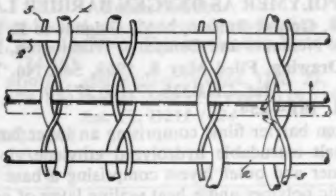


A pallet having a substantially horizontal planar upper support member and a plurality of spacer members attached to the lower side of said support member. Each spacer member is formed of a rigid foam polymeric material and is laterally spaced from each other. Each spacer member further includes first and second oppositely positioned side edges and has a plurality of transversely directed slots therein which project inwardly from each of said first and second side edges.

3,595,730
LENOWEAVE SUBSTRATE CONSTRUCTION
Ralph L. Richardson, Jr., Wayne, N.J., and William L. Horne, Liberty, N.C., assignors to Burlington Industries, Inc., Greensboro, N.C.
Filed Nov. 8, 1967, Ser. No. 681,509
Int. Cl. D03d *13/00, 19/00*
U.S. Cl. 161—89 **5 Claims**

A low-texture backing or support fabric such as scrim is woven by the lenoweave method. A system of pairs of different strength warp yarns are interlaced (i.e. crossed

and twisted) at each point of contact with an interwoven system of filling yarn. The relatively strong or primary warp yarns and the filling yarns have identical tear or rupture strengths. When pressure causes the filling yarns to move or ride up and/or down the warp system, the relatively weak or secondary warp yarns rupture, while the relatively strong primary warp yarns remain intact,



thus maintaining a balanced or uniform substrate construction prior to lamination. The lenoweave fabric may be employed as a chafer or finishing strip in the lamination of elastomeric material used for rubber tires. The foregoing abstract is not intended to define the scope of the invention and is only provided to permit a cursory review of the gist of the invention.

3,595,731

BONDED NON-WOVEN FIBROUS MATERIALS

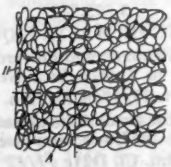
Stanley Davies and Christopher Robert Sissons, Pontypool, England, assignors to British Nylon Spinners Limited, Pontypool, England

Continuation-in-part of applications Ser. No. 342,300 and Ser. No. 342,241, both Feb. 3, 1964. This application Aug. 13, 1968, Ser. No. 752,395

Claims priority, application Great Britain, Feb. 5, 1963, 4,733/63

Int. Cl. B32b *5/14;* D04b *1/06, 3/14*

U.S. Cl. 161—150 22 Claims



A bonded fibrous material containing crimped fibres is made by forming a fibrous structure containing composite potentially crimpable fibres which comprise two fibre-forming components one of which is potentially adhesive and subsequently developing the crimp and rendering the potentially adhesive component adhesive.

3,595,732

PROCESS AND MICROPOROUS PRODUCT

William C. Tingerthal, Maplewood, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

No Drawing. Continuation-in-part of abandoned application Ser. No. 572,216, Aug. 15, 1966. This application June 28, 1967, Ser. No. 649,468

Int. Cl. B32b *5/18, 5/32;* B44d *1/02*

U.S. Cl. 161—159 24 Claims

Microporous polymeric sheet materials and leather substitutes formed from polyurethane or polyurethane-urea polymers which are crosslinked by means of urethane or urea linkages, and a method of forming such materials which includes mixing the active components including an organic-polyisocyanate, a polyol, usually a polyamine, and catalyst together in a solvent, carrying out the reaction in the solvent with agitation until a dispersion of particles insoluble in the solvent is formed, forming the dispersion into a layer and completing the reaction before removal of the liquid vehicle, thus forming a crosslinked microporous layer.

3,595,733

METHOD OF PREPARING ALPHA-UNSATURATED ORGANOSILICON COMPOUNDS

Anna C. Ching and John L. Speier, Midland, Mich., assignors to Dow Chemical Corporation, Midland, Mich.

No Drawing. Filed July 9, 1969, Ser. No. 840,472

Int. Cl. C07f *7/08, 7/18;* C08g *31/22*

U.S. Cl. 260—448.2E 3 Claims

Organosilicon compounds having the structure

$$\equiv SiCH{=}CHR$$

are prepared by reacting $\equiv SiH$ with $CH_2{=}CHR$ in the presence of catalytic osmium such as chloroosmic acid, or metallic osmium in finely divided form. The by-product is an alkane of the formula CH_3CH_2R. For example, trichlorosilane plus ethylene gives vinyltrichlorosilane plus ethane.

3,595,734

PRODUCTION OF FOAMED ARTICLES

Hans-Dietrich Krug, Heidelberg, Germany, assignor to Carl Freudenberg K.G., Weinheim/Bergstrasse, Germany

Original application July 18, 1966, Ser. No. 566,009, now Patent No. 3,468,991, dated Sept. 23, 1969. Divided and this application Mar. 13, 1969, Ser. No. 840,560

Int. Cl. B32b *5/14, 5/20;* B29d *27/00*

U.S. Cl. 161—160 2 Claims

Polyurethane foam article comprising a foam form interior portion and a thick, substantially non-foam form, cross-linked skin surface portion integral with said foam form inner portion, which article was made by foaming polyurethane materials in a mold having internal surfaces coated with an organo-tin polyurethane cross-linking agent.

3,595,735

BLOWN TUBULAR FILMS

Frederick S. Tyrrell, Irvington, N.Y., assignor to National Distillers and Chemical Corporation, New York, N.Y.

No Drawing. Filed May 6, 1968, Ser. No. 727,023

Int. Cl. B29c *19/00;* B32b *27/08*

U.S. Cl. 161—162 8 Claims

Blown laminated tubular films, involving laminates of ethylene-vinyl acetate copolymer cores and linear polyethylene outer layers bonded thereto. The linear polyethylene layers incorporate nucleating agents. The resulting laminates have desirable optical, physical and mechanical characteristics, and are useful in various polyolefin film applications.

3,595,736

UNIAXIALLY ORIENTED FILMS AND TAPES

Richard Harold Barclay Buteux, Welwyn Garden City, England, assignor to Imperial Chemical Industries Limited, London, England

No Drawing. Filed Apr. 27, 1967, Ser. No. 634,079

Claims priority, application Great Britain, May 26, 1966, 23,578/66

Int. Cl. B29d *7/00*

U.S. Cl. 161—165 4 Claims

Uniaxially drawn films and tapes of polyethylene-1:2-diphenoxy-4:4'-dicarboxylate having in the direction of

drawing tensile strength of at least 20,000 p.s.i. and moduli of at least 0.8×10^6 p.s.i. and processes for their production. The films and tapes are useful in many applications, particularly as a magnetic recording tape base.

3,595,737

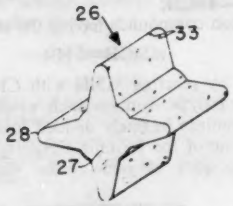
PELLET FOR IMPROVED EXTRUSION METHOD

Rosario J. Perrone, Marion, and Robert M. Wade, Wabash, Ind., assignors to Anaconda Wire and Cable Company

Original application Sept. 11, 1967, Ser. No. 666,574, now Patent No. 3,509,247, dated Apr. 28, 1970. Divided and this application Oct. 1, 1969, Ser. No. 871,204

Int. Cl. B29b *1/03*

U.S. Cl. 161—168 5 Claims



Rubber or plastic pellets for use in a mixing extruder are fluted, with the number and depth of the flutes providing the proper surface to volume ratio for dusting or wetting with one of the components of the composition, such as a curing agent or colorant.

3,595,738

HELICALLY CRIMPED FILAMENTARY MATERIALS

Barry Henson Clarke and Geoffrey Marshall, Harrogate, England, assignors to Imperial Chemical Industries Limited, London, England

No Drawing. Filed May 21, 1968, Ser. No. 730,930

Claims priority, application Great Britain, May 22, 1967, 23,671/67

Int. Cl. D02g *3/02*

U.S. Cl. 161—169 4 Claims

Disclosed is a crimped composite filament having a crimp index in the range of 40% to 70% and 8 to 25 crimps per inch, said filament composed of polyethylene terephthalate polymers having different intrinsic viscosities and having values of birefringence which differ by an amount whereby the factor $\Delta IV.\Delta BR$ lies in the range of 1.9×10^{-4} to 3.3×10^{-3} where ΔIV is the difference in intrinsic viscosities and ΔBR is the difference in the birefringence of the two components.

3,595,739

HEAT-SEALABLE DEVICES FOR MARKING TEXTILE ARTICLES

Peter Meyer, London, England, assignor to Polymark Limited

Filed Mar. 11, 1968, Ser. No. 712,029

Claims priority, application Great Britain, Mar. 8, 1967, 10,949/67

Int. Cl. B32b *27/10, 27/34*

U.S. Cl. 161—229 8 Claims

Heat sealable labels or the like and methods and marking articles by means of such labels are described. The label includes a flexible support incorporating a heat-curing film-forming resin system in the presence of alkylol or alkoxy alkyl groups and under acid conditions, and an information-bearing marking printed on said support. Such a label when heat sealed to a textile or other article is wash- and wear-resistant and withstands the various treatments to which the article may be subjected.

3,595,740

HYDROLYZED ETHYLENE/VINYL ACETATE COPOLYMER AS OXYGEN BARRIER LAYER

Clare W. Gerow, Buffalo, N.Y., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed May 8, 1968, Ser. No. 727,718

Int. Cl. B32b *27/08, 27/30*

U.S. Cl. 161—254 3 Claims

Oxygen barrier films comprising an inner barrier layer of a melt extrudable hydrolyzed ethylene/vinyl acetate copolymer and outer layers comprising a base of a thermoplastic polymer and a heat sealing layer of an ethylene polymer or copolymer.

3,595,741

METHOD OF RECLAIMING STOCK FROM WASTE MATERIAL

Robert B. Goss, Appleton, Wis., assignor to Riverside Paper Corporation, Appleton, Wis.

Continuation-in-part of application Ser. No. 724,377, Apr. 26, 1968. This application Mar. 9, 1970, Ser. No. 17,892

Int. Cl. D21c *5/02*

U.S. Cl. 162—5 12 Claims

A solvent extraction method for reclaiming stock from waste materials containing natural or synthetic plastic or resin material by extracting the plastic or resin material with a suitable solvent. The miscella is separated from the stock and the solvent is recovered by distillation during which a hydrocarbon carrier is added to the miscella to form a favorable liquid waste residue which is readily recoverable from the distillation apparatus.

3,595,742

COKING OF WASTE LIQUORS

Howard V. Hess, Glenham, and Edward L. Cole, Fishkill, N.Y., assignors to Texaco Inc., New York, N.Y.

Filed Nov. 29, 1968, Ser. No. 780,081

The portion of the term of the patent subsequent to Apr. 21, 1987, has been disclaimed

Int. Cl. D21c *11/12*

U.S. Cl. 162—30 8 Claims

Process for treatment of waste liquors from pulp and paper mills wherein waste liquor is heated under turbulent flow conditions in a tubular heater to a temperature above about 450° F. under pressure sufficient to prevent vaporization of water and form a water insoluble solid product, or coke, which is separated from treated aqueous liquid effluent of low COD suitable for reuse in the process or for disposal in lakes and streams without significant water pollution.

3,595,743

FIVE STAGE WOODPULP BLEACHING PROCESS

Ola Sepall, Quebec, Quebec, Canada, assignor to Anglo Paper Products, Limited, Quebec, Quebec, Canada

No Drawing. Filed Feb. 28, 1969, Ser. No. 803,398

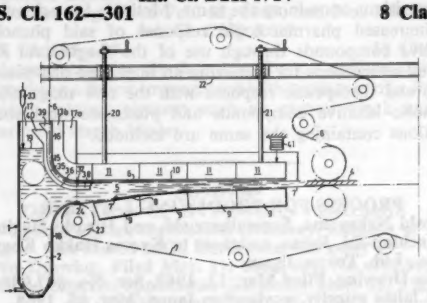
Int. Cl. D21c *3/02, 3/26*

U.S. Cl. 162—89 5 Claims

A bleaching sequence for woodpulps seeks to achieve reduced chemical and steam requirements with improved quality of pulp. The sequence comprises a treatment in

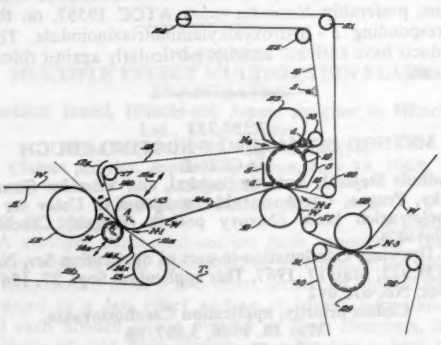
five stages with (1) a chlorination preferably but not essentially with addition of some chlorine dioxide, (2) an extraction with alkali, (3) a chlorine dioxide treatment with 0.2–0.8% chlorine dioxide, (4) a hypochlorite treatment, and (5) a final chlorine dioxide treatment.

3,595,744
PULP-FORMING MACHINE
Helge Natanael Skoldkvist, Storgatan 38A, Umea, Sweden
Continuation-in-part of abandoned application Ser. No. 602,392, Dec. 16, 1966. This application Mar. 26, 1968, Ser. No. 724,665
Claims priority, application Sweden, Dec. 22, 1965, 16,678/65; Poland, Mar. 29, 1967, 119,739
Int. Cl. D21f *1/24*
U.S. Cl. 162—301 **8 Claims**



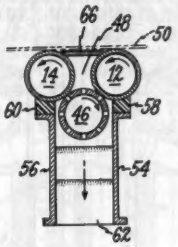
A pulp-forming machine wherein an upper portion of a front wall of a pulp stock chamber or inlet box is sealingly movable between sidewalls of the chamber, and is through an arcuate portion rigidly connected with a top plate member of upper suction boxes to form a unit which is vertically movable relative to a lower plate of lower suction boxes to adjust the profile of the wedge-shaped pulp-forming or compression chamber to any desired shape. In one embodiment, the upper suction boxes are rigidly interconnected, while in the other embodiment, the upper suction boxes are hingedly interconnected to enable individual adjustment of the upper suction boxes when adjusting the profile of the compression chamber.

3,595,745
WEB PICK-UP
Dennis Callahan Cronin, Rockton, Ill., assignor to Beloit Corporation, Beloit, Wis.
Filed Nov. 15, 1967, Ser. No. 683,168
Int. Cl. D21f *2/00*
U.S. Cl. 162—306 **10 Claims**



This relates to the transfer of a moist paper web from one porous belt to another, specifically, from a paper machine forming wire to a pick-up felt. This is done by urging a pick-up felt (wrapping a pick-up roll) into contact with the web on the wire under press nip conditions which are afforded by the use of a grooved press roll backing the forming wire at the web pickup. In order to obtain the most favorable conditions for applying nip pressure and then carrying the web away from the wire on the pick-up felt the grooved roll used has a relatively small radius (and may be crowned to keep the wire spread).

3,595,746
SUCTION BOX FOR PAPER MAKING MACHINES
Harry Little, New Lebanon, N.Y. 12125
Continuation-in-part of application Ser. No. 628,796, Apr. 5, 1967. This application Dec. 8, 1969, Ser. No. 883,109
Int. Cl. D21f *1/50*
U.S. Cl. 162—373 **9 Claims**



A suction box for paper making machines of the Fourdrinier type. The suction box comprises a pair of support rolls or cylinders over which the paper carrying screen travels and a perforated roll or cylinder on which the pair of support rolls rotate. A sealed chamber is provided about the perforated cylinder, with seals engaging a portion of the pair of support rolls. Suction is provided to the sealed chamber, substantially at the center of the length of the perforated cylinder. This draws the water from the web, through the perforated cylinder and into the suction drain outlet. Seals are provided at the ends of the cylinders to complete the suction box. Sealing means are also provided along the edge of the web, between the pair of support cylinders to improve the suction and prevent damage to the traveling screen.

3,595,747
SUCTION BOX COVERS WITH ROWS OF DRAINAGE OPENINGS FOR UNIFORM DEWATERING
Rudolph Walser, Delmar, N.Y., assignor to Huyck Corporation, Rensselaer, N.Y.
Continuation-in-part of abandoned application Ser. No. 561,936, June 30, 1966. This application Sept. 30, 1968, Ser. No. 767,049
Int. Cl. D21f *1/48*
U.S. Cl. 162—374 **7 Claims**

This invention relates to suction box covers, and a method for producing them, for use in uniformly deliquifying a web on a traveling forming medium, for example in papermaking machines; the covers having a plurality of drainage openings of radius R oriented in uniformly spaced parallel rows, the openings in adjacent rows being spaced from each other in the cross-machine direction a center to center distance of A from the next adjacent opening, N consecutive rows of said openings forming

a repetitive pattern, said spacing A being determined by the equation:

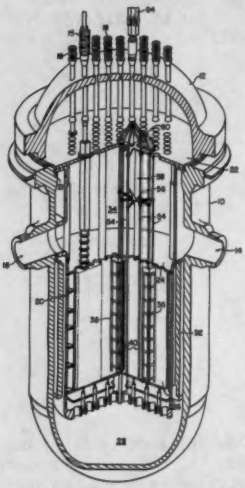
$$\frac{R}{2}+\sum_{M=2}^{M=N}(-1)^{(m-1)}\sqrt{R^2-\left\{\frac{(m-1)A}{2N}\right\}^2}=0$$

3,595,748

NUCLEAR REACTOR CONTROL DEVICE

Erling Frisch, Pittsburgh, Harry N. Andrews, Monroeville, and Howard E. Braun, Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 24, 1968, Ser. No. 700,253
Int. Cl. G21c 7/16
U.S. Cl. 176—36 9 Claims



A nuclear reactor is disclosed wherein a portion of its fuel assemblies have primary or shutdown neutron absorbing control elements coupled to incremental drive mechanisms, and a portion of its fuel assemblies have one or more individually movable auxiliary fine flux trim rods (FFT) coupled to new and improved two-position mechanisms. The two-position mechanisms are associated with curved guide channels in such a manner as to control the position of individual FFT rods associated with a plurality of fuel assemblies.

3,595,749

PURIFICATION OF CULTIVATED MICRO-ORGANISMS

Alastair J. Clark, Banchory, and Raymond J. Hunt, Larbert, Scotland, assignors to The British Petroleum Company Limited, London, England

No Drawing. Filed June 19, 1968, Ser. No. 738,128
Claims priority, application Great Britain, June 19, 1967, 28,063/67
Int. Cl. C12b 1/26
U.S. Cl. 195—28 17 Claims

A process for the removal, at least in part, of contaminants from a mixture of a micro-organism and contaminants, the contaminants consisting of or including a hydrocarbon oil and water, which comprises subjecting the mixture to drum drying in a drier having a pair of hot rolls which constitute a nip whereby at least part of the water is removed by evaporation and wherein an oil enriched product is removed from above the nip and a micro-organism enriched product is removed, from at least one roll, below the nip.

3,595,750

PROCESS OF MAKING MAGNESIUM PHENOLIC LAXATIVE COMPOUND

Alfred Halpern, Great Neck, and Ernest J. Sasmor, Yonkers, N.Y., assignors to Synergistics, Yonkers, N.Y.

No Drawing. Application Dec. 3, 1968, Ser. No. 775,754, now Patent No. 3,526,635, which is a continuation-in-part of application Ser. No. 550,636, May 17, 1966. Divided and this application Nov. 14, 1969, Ser. No. 871,293
Int. Cl. C12d 13/02
U.S. Cl. 195—30 7 Claims

Magnesium compounds formed from phenolic laxative compounds, phenolphthalein, dihydroxyphenolisatin, 4,4'-dihydroxy-2'-aminotriphenylmethane, and 4,4'-(2-pyridylmethylene) dihydroxydiphenyl are described, together with a method for their preparation, and pharmaceutical compositions containing the same. Methods for achieving an increased pharmacologic response of said phenolic laxative compounds through use of the magnesium ion as well as methods for achieving an improved pharmacologic and therapeutic response with the new magnesium phenolic laxative compounds and pharmaceutical compositions containing the same are included.

3,595,751

PROCESS FOR PRODUCING L-LYSINE

Kiyoshi Nakayama, Sagamihara-shi, and Hiroshi Hagino, Hachioji-shi, Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

No Drawing. Filed Mar. 13, 1969, Ser. No. 807,088
Claims priority, application Japan, Mar. 15, 1968, 43/16,458
Int. Cl. C12d 13/06
U.S. Cl. 195—49 12 Claims

A process for producing L-lysine by fermentation which comprises culturing an L-lysine-producing microorganism under aerobic conditions in an aqueous nutrient medium containing ethyl alcohol as the main carbon-containing substrate. Genera of microorganisms employed include Corynebacterium, Brevibacterium, Arthrobacter, Bacillus and Nocardia.

3,595,752

TRIAZINOINDOLE COMPOUNDS

C. John Di Cuollo, Drexel Hill, Roland W. Kiney, Berwyn, and Richard C. Stewart, King of Prussia, Pa., assignors to Smith Kline & French Laboratories, Philadelphia, Pa.

No Drawing. Original application Oct. 6, 1966, Ser. No. 584,657, now Patent No. 3,453,276, dated July 1, 1969. Divided and this application Jan. 17, 1969, Ser. No. 817,593
Int. Cl. C12d 1/02
U.S. Cl. 195—51 3 Claims

3 - carboxyalkylaminotriazino[5,6 - b]indoles are prepared microbiologically by action of a variety of organisms, preferably *Nocardia rubra* ATCC 19557, on the corresponding 3 - hydroxyalkylaminotriazinoindole. The products have antiviral activity, particularly against rhinoviruses.

3,595,753

METHOD OF MAKING WHOOPING COUGH VACCINE

Vladimir Stejskal, Antonin Stejskal, and Vitezslav Stransky, Prague, Czechoslovakia, assignors to Ustav ser a ockovacich latek oborovy podnik, Prague, Czechoslovakia

No Drawing. Continuation-in-part of application Ser. No. 639,022, May 17, 1967. This application Sept. 27, 1967, Ser. No. 671,092
Claims priority, application Czechoslovakia, May 20, 1966, 3,397/66
Int. Cl. C12k 1/00
U.S. Cl. 195—96 3 Claims

A method of harvesting a culture of *H. pertussis* or *B. parapertussis* for conversion to whooping cough vaccine

in which the growth rate of the microorganisms in an inoculated nutrient medium is monitored, and a major portion of the culture is periodically withdrawn for conversion to vaccine and replaced by fresh medium while the growth rate μ is between 2.8 and 5.0 and the number of microorganisms increases at an exponential rate. Under the usual aerobic culturing conditions and with stirring a crop of microorganisms at the peak of their effectiveness may be harvested every 10 to 20 hours.

3,595,754

FABRIC FOR TESTING AMYLASE ACTIVITY

Theodore Cayle, Morganville, and Joseph W. Creely, Middlesex, N.J., assignors to Baxter Laboratories, Inc., Morton Grove, Ill.

No Drawing. Filed Feb. 12, 1969, Ser. No. 798,799
Int. Cl. C09k *3/00*
U.S. Cl. 195—99 **10 Claims**

A test fabric for the determination of amylase activity comprising a fabric impregnated with a mixture of a finely divided colored pigment such as carbon black and a gelatinized starch binder.

3,595,755

DETECTION OF HYDROGEN PEROXIDE

Arnold Härtel, Darmstadt, Germany, assignor to E. Merck A.G., Darmstadt, Germany

No Drawing. Filed Mar. 11, 1968, Ser. No. 711,911
Claims priority, application Germany, Mar. 10, 1967, M 73,125; May 9, 1967, M 3,909
Int. Cl. C09k *3/00*; C012k *1/00*; G01n *31/14*
U.S. Cl. 195—103.5 **19 Claims**

Water-soluble vanadates are redox catalysts in compositions (containing a water-soluble iodide) for the detection of small quantities of hydrogen peroxide. Said detection is useful in the diagnosis of diabetes mellitus, the control of insulin therapy and the determination of other metabolic imbalances.

3,595,756

LABORATORY REAGENT FOR ASSAY OF ALKALINE PHOSPHATASE

Bohdan M. Steciw, Philadelphia, Pa., assignor to Smith Kline & French Laboratories, Philadelphia, Pa.

Continuation-in-part of application Ser. No. 627,430, Mar. 31, 1967. This application Nov. 26, 1968, Ser. No. 779,112
Int. Cl. G01n *31/14*
U.S. Cl. 195—103.5 **10 Claims**

The sensitivity of the known assay for alkaline and acid phosphatases, employing stable salts of p-nitrophenyl phosphoric acid as the substrate, is significantly enhanced by the incorporation into reagent assay of a polyhydric alcohol, typically mannitol.

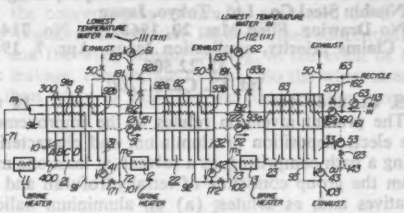
3,595,757

MULTIPLE EFFECT MULTISECTION FLASH EVAPORATOR

Kenkichi Izumi, Hitachi-shi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed July 16, 1969, Ser. No. 842,305
Claims priority, application Japan, July 19, 1968, 43/50,526
Int. Cl. B01d *3/02, 1/28*
U.S. Cl. 202—173 **2 Claims**

A multiple effect multisection flash evaporator comprising a plurality of effect sections arranged in the order of temperature from a first effect section of highest temperature to a last effect section of lowest temperature and each divided into a number of flash chambers, the majority of said flash chambers constituting a heat recovery section and the minority thereof constituting a heat dissipation section. Each effect section is provided with one brine heater for increasing the flash range of each flash chamber to thereby increase the quantity of vapor produced. The effect sections are each provided with means for disconnecting the effect sections as desired



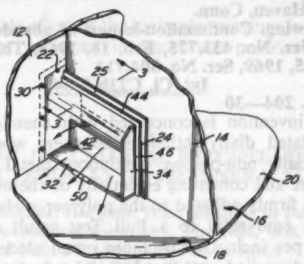
from the system while the remainder of effect sections is operated by accommodating a variation in the quantity of the steam supplied to the system.

3,595,758

MULTISTAGE FLASH EVAPORATOR HAVING REMOVABLE FLASHING DEVICE

Walter M. Deputy, Jr., Wilmington, Del., and Charles M. Jennings, Norwood, and Gideon Levite, Philadelphia, Pa., assignors to Baldwin-Lima-Hamilton Corporation, Philadelphia, Pa.

Filed Aug. 21, 1968, Ser. No. 754,445
Int. Cl. B01d *3/06, 3/10*
U.S. Cl. 202—173 **9 Claims**



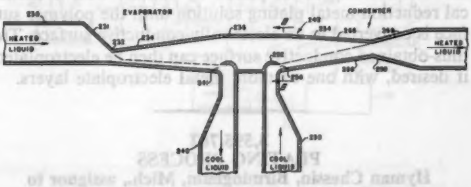
A multistage flash evaporator for desalinization of water is disclosed wherein the flashing device between adjacent stages is removable from the evaporator shell.

3,595,759

DISTILLATION METHODS AND APPARATUS

John Chambers, Rte. 1, Box M41, Del Mar. Calif. 92014

Continuation-in-part of application Ser. No. 528,431, Feb. 18, 1966. This application June 11, 1969, Ser. No. 832,226
Int. Cl. B01d *3/00*; F28b *1/00*
U.S. Cl. 202—185 **11 Claims**



A liquid is distilled by passing it through an evaporator in which it is vaporized by forced convection surface evaporation. The resulting vapor is then passed at a high velocity into a condenser wherein it directly contacts a fluid and condenses therein, with both the vapor and fluid losing velocity which produces an increases in the static pressure. The compression and condensation of the vapor in the liquid approaches an isentropic process.

3,595,760

ELECTRODEPOSITION OF ALUMINIUM

Nobuhiko Ishibashi and Masaki Yoshio, Fukuoka-shi, and Yoshimi Hanamura, Niihama-shi, Japan, assignors to Nisshin Steel Co., Ltd., Tokyo, Japan

No Drawing. Filed Mar. 20, 1968, Ser. No. 714,402
Claims priority, application Japan, Apr. 7, 1967, 42/22,508
Int. Cl. C23b *5/00*
U.S. Cl. 204—14 10 Claims

The present invention relates to the improvements of the electrodeposition of aluminium and characterised by using a bath comprising, as a solvent, at least one member from the group consisting of tetrahydrofuran and its derivatives and, as solutes, (a) an aluminium halide and (b) at least one of lithium aluminium hydride and lithium hydride, in which the molar ratio of the solutes is 1 to 3. One or more aromatic compounds such as benzene together with a chain ether may be added to said bath. According to the present invention, smooth, high density, ductile and coherent aluminium film can be deposited on the cathode body.

3,595,761

CHEMICAL REDUCTION METAL PLATED DIALLYLPHTHALATE POLYMER AND PREPARATION PROCESS

Edward B. Saubestre, Hamden, Conn., and Lawrence J. Durney, North Caldwell, N.J., assignors to Enthone, Incorporated, West Haven Industrial Park, County of New Haven, Conn.

No Drawing. Continuation-in-part of abandoned application Ser. No. 433,775, Feb. 18, 1965. This application Mar. 5, 1969, Ser. No. 804,713
Int. Cl. C23b *5/64*
U.S. Cl. 204—30 6 Claims

This invention is concerned with chemical reduction metal-plated diallylphthalate polymers wherein a thin, substantially non-porous, continuous metal layer of fine grain size and consisting essentially of chemical reduction metal is firmly adhered to the polymer surface by a bond strength equivalent to a Pull Test result of at least 5 pounds per inch. One or more metal electroplate layers may be deposited over the chemical reduction metal layer. The invention is also concerned with the preparation of metal-plated diallylphthalate polymers involving the contacting of the polymer surface destined to be metal plated with an alkaline aqueous solution containing about 5 to 45 weight percent of methyl Carbitol and about 5 to 30 weight percent of sodium hydroxide or potassium hydroxide until the polymer surface is converted to a gelled and hydrophilic polymer surface, followed by contacting the gelled hydrophilic surface with a chromic acid- and/or sulfuric acid-containing aqueous acid etchant solution until the polymer surface is converted to a surface readily bondable to electroless metal plating by a firmly adherent bond. The thus-treated polymer surface is then activated and electrolessly metal plated by contact with a chemical reduction metal plating solution until the polymer surface is converted to an electrically conductive surface. The thus-obtained conductive surface can then be electroplated, if desired, with one or more metal electroplate layers.

3,595,762

PLATING PROCESS

Hyman Chessin, Birmingham, Mich., assignor to M & T Chemicals Inc., New York, N.Y.

Continuation-in-part of application Ser. No. 509,267, Nov. 23, 1965. This application Oct. 16, 1968, Ser. No. 767,972
The portion of the term of the patent subsequent to Apr. 6, 1988, has been disclaimed
Int. Cl. C23f *17/00*; C23b *7/00, 5/06*
U.S. Cl. 204—38R 21 Claims

In accordance with certain of its aspects, this invention relates to novel compositions and to a process for preparing a metal plate receptive to a decorative noble metal deposit, characterized by the presence of microporous areas and microcracked areas over substantially the entire surface of said noble metal plate, comprising affixing to a basis material bearing a conductive metal surface a stratum of particles having a particle size of about 0.05–15 microns and a density on said conductive metal surface of about 100–5,000,000 particles/cm.^{2}; and

depositing in said stratum of particles a conductive metal layer containing sulfur-free nickel having an effective thickness less than the maximum thickness of said stratum of particles thereby forming a matrix wherein said particles are retained affixed to said surface in fixed position in said conductive metal layer, and at least some of said particles intercept the surface of said conductive metal layer.

3,595,763

PROCESS FOR THE PRODUCTION OF FLUOROCHLOROPHOSGENE

Peter Voss, Leverkusen, and Hans Niederprüm, Monheim, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Oct. 9, 1968, Ser. No. 766,299
Claims priority, application Germany, Oct. 18, 1967, F 53,810
Int. Cl. B01k *3/00*
U.S. Cl. 204—59 4 Claims

Process for the production of carbonyl fluoride or carbonyl chlorofluoride by electrolyzing carbonyl dichloride or carbon monoxide optionally in the presence of carbonyl chloride, chlorine or chlorine donors in anhydrous hydrofluoride acid at a cell voltage of from 4 to 8 volts and at a temperature of from —20 to 20° C., the carbonyl fluoride or carbonyl chlorofluoride being removed from the reaction gases leaving the electrolysis cell by cooling.

3,595,764

ADIPONITRILE PRODUCTION BY THE ELECTROLYTIC HYDRODIMERIZATION OF ACRYLONITRILE

Maomi Seko and Kazuhiko Mihara, Tokyo, Shinsaku Ogawa and Shoichiro Kumazaki, Yokohama, and Ryozo Komori and Muneo Yoshida, Kawasaki, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

No Drawing. Filed May 31, 1967, Ser. No. 642,321
Claims priority, application Japan, June 14, 1966, 41/37,988, 41/37,989, 41/37,990
Int. Cl. C07b *1/00*
U.S. Cl. 204—73 52 Claims

The electrolytic hydrodimerization of acrylonitrile using an emulsion having an oil phase and a continuous aqueous phase, the acrylonitrile being distributed in the aqueous phase as dissolved acrylonitrile and in the oil phase in sufficient quantity to supply additional acrylonitrile to the aqueous phase upon acrylonitrile depletion in that phase. The concentration of the dissolved acrylonitrile in the aqueous phase is preferably maintained below about 5% by weight and a quaternary ammonium compound is preferably utilized as the supporting electrolyte salt. The emulsion preferably contains an anion polymerization inhibitor to suppress electric current-induced acrylonitrile polymerization and preferably a protective colloid is present. The use of this anion polymerization inhibitor

and preferably the use of the protective colloid is also applicable when operating in the conventional manner utilizing a conventional solution as opposed to an emulsion for the electrolysis.

3,595,765

PROCESS FOR THE ELECTROLYTIC REGENERATION OF REDUCED CHROMIUM COMPOUNDS

Louis A. Joo, Johnson City, Tenn., assignor to Great Lakes Carbon Corporation, New York, N.Y.

Original application Oct. 8, 1965, Ser. No. 493,995, now Patent No. 3,450,623, dated June 17, 1969. Divided and this application Aug. 7, 1968, Ser. No. 750,967
The portion of the term of the patent subsequent to Jan. 21, 1986, has been disclaimed
Int. Cl. B01k *1/00*; C01g *37/00*
U.S. Cl. 204—89 **6 Claims**

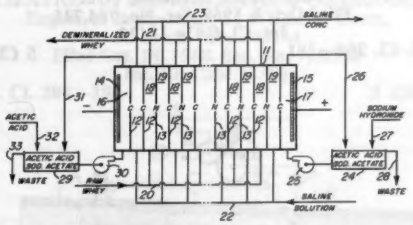
An electrolytic process for the continuous conversion of reduced chromium values to the hexavalent form, which consists in subjecting an aqueous sulfuric acid solution of reduced chromium to the action of direct current voltage applied in series to a multi-unit filter press type cell assembled from chromic acid resistant material, lead electrodes and polytetrahaloethylene diaphragms having a porosity of about 40% and a pore diameter preferably within the range of 50 to 150 microns.

3,595,766

PREVENTION OF PROTEIN PRECIPITATION IN THE ELECTRODIALYTIC TREATMENT OF WHEY

John R. Scheder, Horicon, Wis., assignor to Purity Electrochemical Company, Mayville, Wis.

Filed Feb. 27, 1969, Ser. No. 802,766
Int. Cl. B01d *13/02*
U.S. Cl. 204—180P **5 Claims**



Whey is demineralized in a multichamber electrodialysis cell comprising deionization chambers and concentrating chambers formed between alternating cation membranes of ion exchange material and neutral membranes. Protein precipitation is reduced, or prevented, by preventing substantial changes in the pH of at least the anolyte by the use of a buffer electrolyte, thus reducing the generation of hydrogen ions which appear to cause such precipitation.

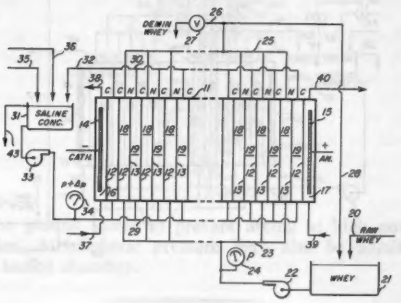
3,595,767

PREVENTION OF CALCIUM PRECIPITATION IN THE ELECTRODIALYTIC DEMINERALIZATION OF WHEY

John R. Scheder, Horicon, Wis., assignor to Purity Electrochemical Company, Mayville, Wis.

Filed Feb. 27, 1969, Ser. No. 802,848
Int. Cl. B01d *13/02*
U.S. Cl. 204—180P **4 Claims**

Whey is demineralized in a multichamber electrodialysis cell comprising alternating ion exchange membranes and neutral membranes. Calcium precipitation occurring in the cell primarily in its concentrating chambers on the face of the ion selective membranes bordering the concentrating chambers, and caused by accidental whey leakage in the concentrating stream, is prevented by a hydraulic pressure differential between the concentrating stream and the whey stream causing, in the event of hydraulic leakage, concentrate to pass into the whey stream rather than whey to pass into the concentrating stream.



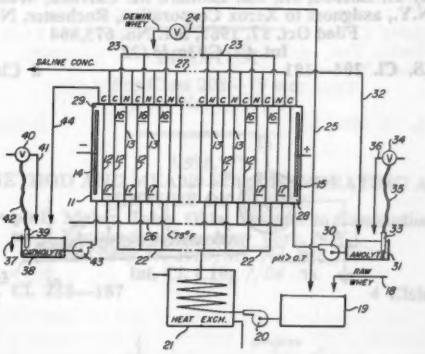
A beneficial side effect of the hydraulic pressure inequality is an apparent reduction in membrane polarization.

3,595,768

PREVENTION OF CALCIUM PRECIPITATION IN THE ELECTRODIALYTIC DEMINERALIZATION OF WHEY

John R. Scheder, Horicon, Wis., assignor to Purity Electrochemical Company, Mayville, Wis.

Filed Feb. 27, 1969, Ser. No. 803,014
Int. Cl. B01d *13/02*
U.S. Cl. 204—180P **3 Claims**

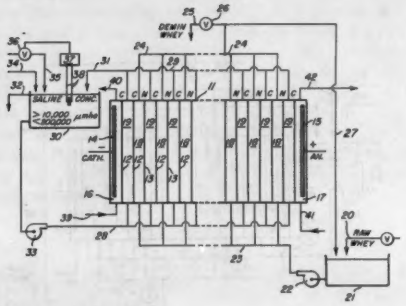


Whey is demineralized in a multichamber electrodialysis cell comprising ion exchange membranes and neutral membranes. Calcium precipitation occurring in the cell as a result of accidental whey leakage into the concentrating chambers is sharply reduced by temperature reduction of the recirculating whey streams, between passes, below 85° F.

3,595,769
PREVENTION OF CALCIUM PRECIPITATION IN THE ELECTRODIALYTIC DEMINERALIZATION OF WHEY

John R. Scheder, Horicon, Wis., assignor to Purity Electrochemical Company, Mayville, Wis.

Filed Feb. 27, 1969, Ser. No. 803,015
Int. Cl. B01d *13/02*
U.S. Cl. 204—180P 2 Claims



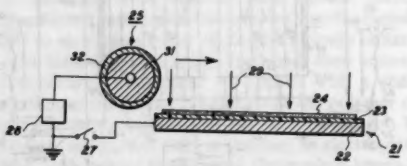
Whey is demineralized in a multichamber electrodialysis cell comprising cation membranes and neutral membranes in alternating sequence.

Calcium precipitation on the neutral membrane face in the whey stream is found to be related to the electrical conductivity of the adjacent salt stream, and a critical conductivity range is determined within which the productivity loss is at a minimum, including an optimum conductivity value at which productivity loss due to such calcium precipitation is practically zero.

3,595,770
SEQUENTIAL PHOTOELECTROPHORETIC IMAGING SYSTEM

Ray H. Luebbe, Jr., and Leonard M. Carreira, Webster, N.Y., assignors to Xerox Corporation, Rochester, N.Y.

Filed Oct. 17, 1967, Ser. No. 675,864
Int. Cl. G03g *13/22*
U.S. Cl. 204—181 6 Claims

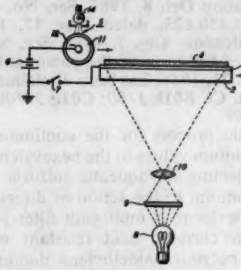


An electrophotoretic imaging system comprising exposing a suspension of electrically photosensitive particles in a liquid carrier to imagewise light and, subsequently, developing the image by applying a field across the suspension which causes particle migration in image configuration. The photosensitive particles of this system exhibit fatigue characteristics in that they remain electrically sensitive for a period of time after having been exposed to activating electromagnetic radiation.

3,595,771
METHOD OF REMOVING ACCUMULATED CHARGES IN PHOTOELECTROPHORETIC IMAGING

John W. Weigl, West Webster, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Filed Aug. 20, 1968, Ser. No. 753,973
Int. Cl. G03g *13/22*
U.S. Cl. 204—181 8 Claims

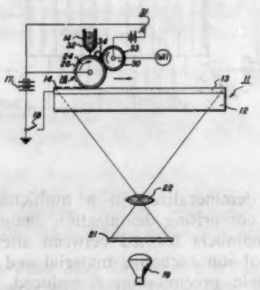


Accumulation of undesired potential on the blocking electrode in a photoelectrophoretic imaging system during successive imaging operations is prevented by incorporating a photoconductive layer in the blocking electrode. The photoconductive layer is discharged by flood illumination between imaging cycles.

3,595,772
METHOD OF BREAKING PARTICLE AGGLOMERATES IN THE PHOTO ELECTROPHORETIC IMAGING SYSTEM

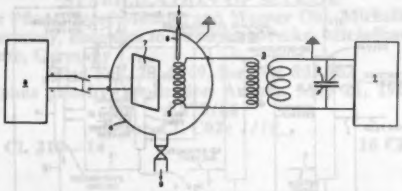
Edwin Zucker, Rochester, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Filed Oct. 3, 1968, Ser. No. 764,721
Int. Cl. G03g *13/22*
U.S. Cl. 204—181 5 Claims



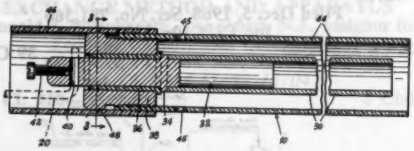
This invention relates to a method and apparatus for creating high shear stresses in a particulate suspension prior to use of such suspension for imaging or inking. The method and apparatus in one environment function to stress a thin layer of an electrophoretic suspension of particles in a liquid carrier. The prestressed suspension is better suited than unstressed suspensions for preparing both monchromatic and polychromatic copies from originals by particle migration through the suspension when it is exposed to electromagnetic radiation in image configuration while in an electric field across the suspension between two electrodes. The method and apparatus is also used for printing inks in order to form a prestressed, uniform, thin layer of the ink for application to the press.

3,595,773
PROCESS FOR DEPOSITING ON SURFACES
Joseph Gerard Wurm and Pierre Beucherie, Biandrono, and Michel Block, Cocquio, Varese, Italy, assignors to European Atomic Energy Community (Euratom), Brussels, Belgium
Original application Sept. 16, 1966, Ser. No. 579,917, now Patent No. 3,540,993, dated Nov. 17, 1970. Divided and this application May 8, 1969, Ser. No. 842,051
Claims priority, application Belgium, Dec. 17, 1965, 21,744
Int. Cl. C23c *15/00*
U.S. Cl. 204—192 **10 Claims**



A method for depositing a thin layer of at least partially conducting material on a body and comprising maintaining the body in a low pressure gaseous atmosphere, feeding gas into the atmosphere while maintaining the low pressure and applying a high-frequency voltage to a coil or electrode pair located within the atmosphere and adjacent both the body and feeding means to produce a high-frequency electromagnetic field for ionization of the gas.

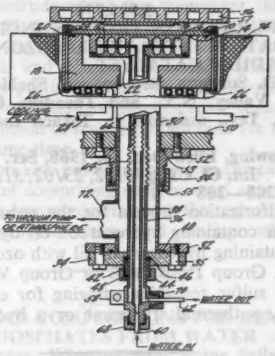
3,595,774
LAY-IN ELECTRODE FOR ELECTROLYTIC STABILIZATION OF RFFRIGERATION CONDENSERS
Eugene S. Bremerman, 82 Whitehall Court, St. Louis, Mo. 63144
Filed Oct. 18, 1968, Ser. No. 768,768
Int. Cl. C23f *13/00*
U.S. Cl. 204—196 **3 Claims**



Inhibition of scale formation and inhibition of electrolytic corrosion is accomplished by an insulated electrode which can be simply laid in a reservoir underlying refrigeration condenser coils.

3,595,775
SPUTTERING APPARATUS WITH SEALED CATHODE-SHIELD CHAMBER
Daniel H. Grantham, Glastonbury, Daniel J. Quinn, Manchester, and Edouard L. Paradis, Willimantic, Conn., assignors to United Aircraft Corporation, East Hartford, Conn.
Filed May 15, 1969, Ser. No. 824,929
Int. Cl. C23c *15/00*
U.S. Cl. 204—298 **8 Claims**

Films of material are deposited on a substrate at high rates by sputtering in which a target is bombarded by ions in a low pressure glow discharge in the presence of a magnetic field. A very low pressure is provided by a vacuum pump in a sealed chamber between the cathode



and the ground shield to prevent arcing at high power densities. Atmospheric pressure may also be admitted to the sealed chamber.

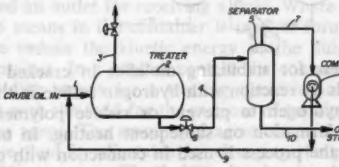
3,595,776
PLASTICIZER MATERIALS DERIVED FROM CRUDE OILS
Donald D. Davidson, Pasadena, and Bernard K. Mueller, Bakersfield, Calif., assignors to Witco Chemical Corporation, New York, N.Y.
No Drawing. Filed July 15, 1968, Ser. No. 744,670
Int. Cl. C10g *17/06, 31/14*
U.S. Cl. 208—14 **6 Claims**

Preparation of petroleum-derived hydrocarbon oils which have particular utility as secondary plasticizers for synthetic polymers and elastomers. A lubricating oil fraction having an initial high content of aromatics is solvent extracted to produce an extract having an aromatics content of at least 87%, said extract is admixed with a strong mineral acid, the sludge which forms is separated, the remaining acid oil is neutralized, then subjected to vacuum distillation, and is then advantageously hydrogenated.

ERRATUM

For Class 208—19 see:
Patent No. 3,595,967

3,595,777
METHOD AND MEANS FOR DEHYDRATING A MIXTURE OF FLUIDS
Joseph L. Maher, Tulsa, Okla., assignor to Combustion Engineering, Inc., New York, N.Y.
Filed May 19, 1969, Ser. No. 825,727
Int. Cl. C10g *7/04*
U.S. Cl. 208—187 **4 Claims**



A vessel receives a fluid mixture to process the mixture. Removal of the processed fluids is carried out with a pressure reduction. A vapor is evolved from the mix-

ture and compressed and mixed with the fluid mixture received by the vessel to raise the enthalpy of the mixture to carry out the process in the vessel.

3,595,778

DESULFURIZATION PROCESS INCLUDING AN OXIDATION STEP WITH OZONE AND A VANADIUM CATALYST

Richard D. Smetana, Beacon, and Sheldon Herbstman, Spring Valley, N.Y., and Theodore C. Mead, Port Arthur, Tex., assignors to Texaco Inc., New York, N.Y.

No Drawing. Filed Dec. 16, 1968, Ser. No. 784,265
Int. Cl. C10g *19/02, 23/02, 31/14*
U.S. Cl. 208—208 9 Claims

A desulfurization process for the reduction of sulfur in a sulfur containing hydrocarbon oil by contacting the sulfur containing hydrocarbon oil with ozone in the presence of a Group IV–B, V–B or Group VI–B metal followed by sulfur reduction utilizing for example a base treatment, a thermal treatment or a hydrosulfurization treatment.

3,595,779

CATALYTIC HYDROGEN CONTACT PROCESS

Reese A. Peck, Raymond F. Wilson, and Frank E. Guptill, Jr., Fishkill, N.Y., assignors to Texaco Inc., New York, N.Y.

No Drawing. Filed Mar. 28, 1969, Ser. No. 811,635
Int. Cl. C10g *31/14*
U.S. Cl. 208—210 8 Claims

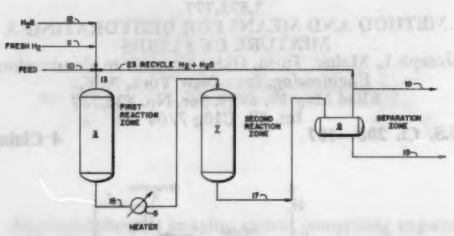
A catalytic hydrogen contact process for the hydrosulfurization of heavy hydrocarbon materials by introducing a heavy hydrocarbon material into a catalyst zone comprising a first catalyst zone below and a second catalyst zone above the point of entry of the heavy hydrocarbon material, in the presence of hydrogen wherein the hydrogen is introduced in countercurrent relationship to said heavy hydrocarbon material and maintained at a rate sufficient to provide for liquid contact of the second catalyst zone and recovering an increased proportion of lower boiling hydrocarbons and/or hydrocarbons of rereduced sulfur content.

3,595,780

PROCESS FOR STABILIZATION OF DIOLEFIN-CONTAINING HYDROCARBONS

Charles T. Adams, Houston, and Richard E. Fruit, La Porte, Tex., assignors to Shell Oil Company, New York, N.Y.

Filed May 1, 1969, Ser. No. 820,759
Int. Cl. C10g *23/02*
U.S. Cl. 208—216 10 Claims



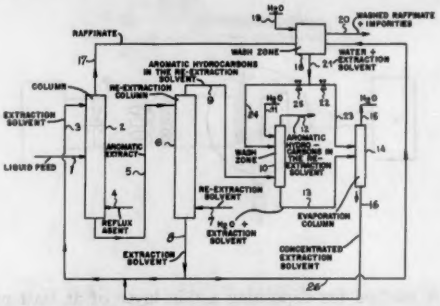
A process for stabilizing diolefins in cracked hydrocarbon oils by reaction with hydrogen sulfide in the presence of hydrogen to prevent or reduce polymerization and gum formation on subsequent heating. In one embodiment the process is used in connection with conventional hydrogenation/hydrosulfurization to stabilize diolefin-containing cracked oils by conversion, at least in part, of diolefins to organic sulfur compounds followed by subsequent hydrogenation and desulfurization.

3,595,781

SOLVENT EXTRACTION OF AROMATIC HYDROCARBONS

Francois Pierre Navarre, Paris, André Molines, Moureux-Neuf, and Claude Raimbault, Sevres, France, assignors to Institut Francais du Petrole, des Carburants et Lubrifiants, Rueil Malmaison, Hauts-de-Seine, France

Filed Dec. 3, 1968, Ser. No. 780,623
Claims priority, application France, Dec. 6, 1967, 131,258
Int. Cl. C10g *21/28*
U.S. Cl. 208—321 14 Claims



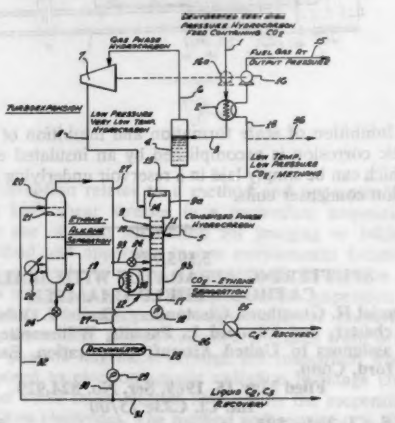
A process for purifying at least a portion of a recycled extraction solvent recovered, from the extract, in the solvent extraction of aromatic hydrocarbons from a liquid and mixture of said aromatic hydrocarbons and a raffinate which comprises contacting said portion of the extraction solvent with the raffinate in the presence of additional water so that the ratio of the total water to recycle extraction solvent present in about 0.7 part by weight of water to about 100 parts by weight of recycle extraction solvent.

3,595,782

METHOD FOR SEPARATING CARBON DIOXIDE FROM HYDROCARBONS

Robert W. Bucklin, Houston, and Howard Grekel, Claremore, Tex., and Lamar F. Sudduth, Tulsa, Okla., assignors to The Fluor Corporation, Ltd., and Pan American Petroleum Corporation, fractional part interest to each

Filed Dec. 5, 1968, Ser. No. 781,360
Int. Cl. C10g *5/06*
U.S. Cl. 208—340 39 Claims



High carbon dioxide content e.g. 1–10% carbon dioxide by volume, high pressure hydrocarbon feed gases are proc-

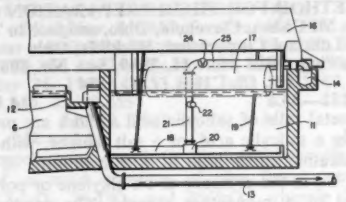
essed to liquid ethane essentially free of both methane and carbon dioxide with simultaneous production of low pressure distribution gas comprising methane and carbon dioxide without carbon dioxide icing to foul equipment by turbo-expansion of the precooled feed gas and stripping thereof while maintaining pressures thereon at which non-gaseous carbon dioxide remains dissolved in liquid hydrocarbon. Liquefaction of the ethane gas is achieved by heat exchange with stripper bottoms. The process thus achieves maximum conservation of heat and power.

3,595,783

METHOD AND APPARATUS FOR AEROBIC STABILIZATION OF SLUDGE

Peter Pflanz, Josef Muskat, and Werner Ohl, Michelbach, Germany, assignors to Passavant-Werke, Michelbacherhutte, Germany

Filed Feb. 28, 1969, Ser. No. 803,182
Claims priority, application Austria, May 21, 1968, 4,872/68
Int. Cl. C02c *1/10*
U.S. Cl. 210—14 **16 Claims**



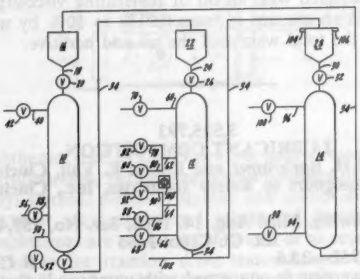
A method and apparatus for aerboic stabilization of sewage sludge. Separate circulating and aerating devices are provided, the former for stirring up sludge from the tank bottom and the latter for injecting gas into the stirred up sludge. Both devices may be mounted on the same traveling bridge with the aerating means forward of the circulating means for movement together along the tank.

3,595,784

CONTINUOUS COUNTERCURRENT ION EXCHANGE METHOD AND APPARATUS

Donald J. Butterworth, Lyndhurst, N.J., assignor to Ecodyne Corporation, Chicago, Ill.

Filed Oct. 14, 1968, Ser. No. 767,438
Int. Cl. B01d *15/02, 15/04*
U.S. Cl. 210—33 **7 Claims**



In a conventional continuous countercurrent ion exchange resin systems, wherein the regeneration tank has an upper resin inlet, an upper liquid outlet, a regenerant inlet below the liquid outlet, separation liquid inlet means below the regenerant inlet, and a lower resin outlet below the separation liquid inlet, a method for transferring resin is provided which insures a continuous upflow during the introduction of regenerant. The tank is filled with resin, regenerant is introduced at the regenerant inlet, and a separation liquid and supplemental separation liquid are introduced at the separation liquid inlet means to pressurize the tank and compact the resin, simultaneously forcing a minor portion of the resin out through the resin outlet. The introduction of supplemental separation liquid and the removal of resin from the tank are terminated at about the same time.

The invention also provides apparatus for carrying out the method, and comprising supplemental separation liquid inlet means communicating with the regeneration tank below the regenerant inlet, and having valve means thereon.

3,595,785

METHOD AND COMPOSITIONS FOR REMOVING PHOSPHATES FROM WATER

Burnett D. Bruce, Wheaton, and Heinz Seiler, Cicero, Ill., assignors to Eagle-Picher Industries, Inc., Cincinnati, Ohio

No Drawing. Filed Feb. 5, 1970, Ser. No. 9,064
Int. Cl. C02b *1/18*
U.S. Cl. 210—59 **8 Claims**

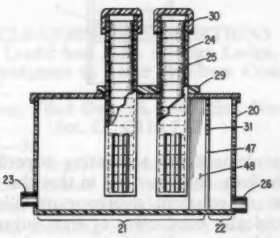
Method and compositions for inorganic phosphates from waste waters wherein the phosphate bearing water is contacted with a borosilicate glass composition containing from 5 to 25% by weight of one or more of the following oxides: calcium oxide, barium oxide and zinc oxide.

3,595,786

APPARATUS FOR TREATING FLUIDS

Roland J. Horvath, South Euclid, and Charles G. Parsons, Mentor, Ohio, assignors to Diamond Shamrock Corporation, Cleveland, Ohio

Continuation-in-part of abandoned application Ser. No. 748,840, July 30, 1968. This application Apr. 27, 1970, Ser. No. 32,099
Int. Cl. B01d *57/00*
U.S. Cl. 210—198 **12 Claims**



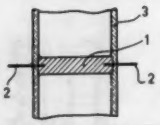
Apparatus for treating fluids has a container with an inlet and an outlet for receiving a fluid. Where necessary, a baffle means in the container is used to form a stilling zone to reduce the kinetic energy of the fluid entering the container. In a contact zone in the container at least one holding means for a treating agent is positioned in contact with the fluid for the purpose of treating the fluid with the agent. The amount of agent exposed to contact with the fluid is adjustable by changing the position of the holding means. The holding means is rechargeable from without the container and a baffle means with an adjustable weir opening (which could be the outlet to the container) is disposed after the contact zone to reg-

ulate the amount of fluid in the container capable of contacting the agent. The apparatus can be used in treating the effluent from waste water treatment plants.

3,595,787
STREAM POLLUTION CONTROL PROCESS
Morris Sheikh, 803 Canterbury Crescent, Bloomfield Hills, Mich. 48013
No Drawing. Filed Apr. 14, 1966, Ser. No. 542,468
Int. Cl. C02c *5/02*
U.S. Cl. 210—60 1 Claim

A stream pollution control process is disclosed comprising treating soluble oil waste emulsions in an industrial plant effluent with treatment chemicals selected from the group consisting of inorganic salts and bases to split said soluble oil waste emulsions into an oil phase containing said oil and a water phase containing said other pollutants, an emulsifier being added in said process to eliminate tendency of the oil phase to become sticky from said splitting by said treatment chemicals, separating said oil and water phases from each other and thereafter separately treating them without discharging oil or said other pollutants into streams, threating said oil phase to render it re-usuable as soluble oil, concentrating the water phase to render it re-usable as said treatment chemicals for treating further amounts of said soluble oil waste emulsions, and repeating the above treatment in a closed cycle in respect to said industrial plant effluent by re-using the concentrated water phase as said treatment chemicals to treat further amounts of soluble oil waste emulsions in said industrial plant effluent.

3,595,788
FILTER FOR SEPARATING SUPERFLUID HELIUM
Wilhelmus Franciscus Knippenberg and Gerrit Verspui, Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Apr. 8, 1970, Ser. No. 26,696
Claims priority, application Netherlands, Apr. 16, 1969, 6906104
Int. Cl. B01d *39/00*
U.S. Cl. 210—500 2 Claims



A filtering element for separating superfluid helium from liquid helium, characterized in that the filtering element consists of coherent microporous silicon carbide which is electrically conductive at least superficially due to additions (donors and/or acceptors) determining the conductivity properties, said element comprising current supply contacts.

3,595,789
GREASE RESISTANT TO OIL SEPARATION AT ELEVATED TEMPERATURE
Henry Selden Coshburn, Jr., New York, N.Y., assignor to Mobil Oil Corporation
No Drawing. Filed Dec. 16, 1968, Ser. No. 784,186
Int. Cl. C10m *5/20, 5/16, 7/25*
U.S. Cl. 252—28 10 Claims

Greases substantially resistant to oil separation at elevated temperature are formed by preparing a grease composition containing a complex soap or a clay gelling agent and then mixing with the grease a minor amount of a polyisobutylene, a polystyrene, or a methacrylate copolymer, without substantial shearing of the polymer.

3,595,790
OIL SOLUBLE HIGHLY BASIC METAL SALTS OF ORGANIC ACIDS
George R. Norman, Lyndhurst, and William M. Le Suer, Cleveland, Ohio, assignors to The Lubrizol Corporation, Wickliffe, Ohio
No Drawing. Continuation-in-part of application Ser. No. 858,603, Dec. 10, 1959, which is a continuation-in-part of application Ser. No. 410,461, Feb. 15, 1954. This application Oct. 22, 1969, Ser. No. 868,586
Int. Cl. C10m *1/40, 1/46*
The portion of the term of the patent subsequent to Apr. 4, 1984, has been disclaimed
U.S. Cl. 252—32.7 13 Claims

Oil soluble basic metal salts of organic acids such as sulfonic acids, carboxylic acids and phosphorus acids are obtainable by the reaction of such acids with an excess amount of metal base in the presence of an acidic gas such as carbon dioxide and a promoter such as alcohol under substantially anhydrous conditions.

3,595,791
BASIC, SULFURIZED SALICYLATES AND METHOD FOR THEIR PREPARATION
Jerome M. Cohen, Cleveland, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio
No Drawing. Filed Mar. 11, 1969, Ser. No. 806,289
Int. Cl. C10m *1/24, 1/54*
U.S. Cl. 252—33.6 14 Claims

Basic metal salts of salicylic acid sulfides are prepared by reacting a salicylic acid, or a salt thereof, with sulfur and an alkaline earth base at a temperature of about 150–250° C., in the presence of an alkylene or polyalkylene glycol or a monoether thereof. The products are useful as detergent additives for lubricants.

3,595,792
LUBRICATING OIL ADDITIVES
John Scotchford Elliott and Gerald John Joseph Jayne, London, and Anthony David Brazier, Wokingham, Berkshire, England, assignors to Castrol Limited, London, England
No Drawing. Filed Apr. 4, 1968, Ser. No. 718,930
Claims priority, application Great Britain, Apr. 5, 1967, 15,726/67
Int. Cl. C10m *1/48*
U.S. Cl. 252—32.7 9 Claims

The invention provides a lubricating oil additive consisting essentially of a mixture of at least one bismuth dihydrocarbyl dithiophosphate and at least one salt of a dihydrocarbyl dithiophosphoric acid and a metal of Group II*b* of the Periodic Table selected from the group consisting of zinc dihydrocarbyl dithiophosphates and cadmium dihydrocarbyl dithiophosphates, which additive may be admixed with an oil of lubricating viscosity, for example in an amount of from 0.01% to 10% by weight based on the total weight of the oil and additive.

3,595,793
LUBRICANT COMPOSITION
Raymond H. Boehringer and Robert E. Vail, Cincinnati, Ohio, assignors to Emery Industries, Inc., Cincinnati, Ohio
No Drawing. Filed Aug. 14, 1968, Ser. No. 755,495
Int. Cl. C10m *1/36*
U.S. Cl. 252—33.6 8 Claims

This invention is concerned with compounds that may be used as additives in synthetic lubricants. The compounds are formed from an amide of benzoic acid or a substituted benzoic acid and aminoguanidine bicarbonate, and a salt forming aliphatic or aromatic carboxylic acid having from about 6 to 40 carbon atoms.

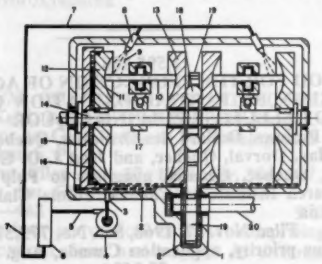
3,595,794
ELECTROSTATOGRAPHIC DEVELOPER
Robert J. Hagenbach and Myron J. Lenhard, Rochester, N.Y., assignors to Xerox Corporation, Rochester, N.Y.
No Drawing. Filed Apr. 17, 1967, Ser. No. 631,193
Int. Cl. G03g 9/02
U.S. Cl. 252—62.1 3 Claims

An electrostatographic developer mixture comprising finely-divided electroscopic toner particles having a size less than about 30 microns and substantially homogeneous glass carrier particles having an average particle size between about 30 microns and about 1000 microns, each of the carrier particles having a specific gravity between about 3.0 and about 7.6 and consisting essentially of from about 12 percent to about 30 percent by weight oxides of silicon and from about 70 percent to about 88 percent by weight oxides of lead and less than about 5 percent by weight oxides of sodium, potassium, lithium and mixtures thereof.

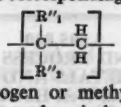
3,595,795
PIEZOELECTRIC CERAMIC
Norio Tsubouchi, Masao Takahashi, Tomeji Ohno, and Tsuneo Akashi, Tokyo-to, Japan, assignors to Nippon Electric Company, Limited, Tokyo, Japan
Filed Nov. 8, 1967, Ser. No. 681,494
Claims priority, application Japan, Nov. 11, 1966, 41/74,371, 41/74,372; Nov. 26, 1966, 41/77,372; May 26, 1967, 42/33,509; June 19, 1967, 42/39,854, 42/39,855
Int. Cl. C04b 35/46, 35/48
U.S. Cl. 252—62.9 4 Claims

A piezoelectric ceramic is disclosed consisting essentially of a solid solution of the three components $Pb(Li_{1/4}Z_{3/4}O_3$, $PbTiO_3$ and $PbZrO_3$, wherein Z represents one element selected from the group consisting of Nb, Ta and Sb.

3,595,796
TRACTION DRIVE TRANSMISSION CONTAINING NAPHTHENES, BRANCHED PARAFFINS, OR BLENDS OF NAPHTHENES AND BRANCHED PARAFFINS AS LUBRICANTS
Irl N. Duling, West Chester, and David S. Gates, Swarthmore, Pa., assignors to Sun Oil Company, Philadelphia, Pa.
Filed Nov. 1, 1967, Ser. No. 679,833
Int. Cl. C09k 3/00; F16h 15/08
U.S. Cl. 252—73 20 Claims

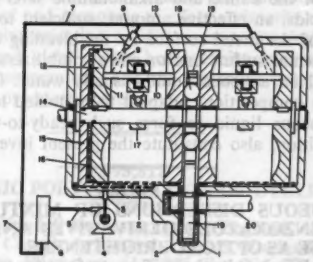


Naphthenes, such as alkyl Decalins, perhydroterphenyls, perhydrofluorenes, perhydrogenated oligomers of styrene, α-methyl styrene, β-methyl styrene and mono- di-, tri- or tetraalkyl or alkyl cyclohexyl substituted derivatives of such naphthenes are useful as lubricants or as components of lubricants for traction drive transmissions. A novel traction fluid having a high traction coefficient and a high viscosity index is obtained by blending selected napthenes with from 0.1–20 parts by weight, based on the naphthene, of a branched paraffin corresponding to hydrogenated liquid C_3–C_8 olefin polymer, copolymer, or terpolymer. Hydrogenated petroleum oils are also useful as traction fluids or as components of blended traction fluids, as are branched paraffins corresponding to the formula



wherein R''_1 is hydrogen or methyl, and when R''_1 is hydrogen, R''_2 is isopropyl or isobutyl, and when R''_1 is methyl, R''_2 is methyl, ethyl, isopropyl or isobutyl.

3,595,797
BLENDING BRANCHED PARAFFIN FLUIDS FOR USE IN TRACTION DRIVE TRANSMISSIONS
Irl N. Duling, West Chester, David S. Gates, Swarthmore, and Marcus W. Haseltine, Jr., Chester, Pa., assignors to Sun Oil Company, Philadelphia, Pa.
Filed Nov. 1, 1967, Ser. No. 679,834
Int. Cl. F09k 3/00; F16h 15/08
U.S. Cl. 252—73 14 Claims



A hydrocarbon base stock, useful as a lubricant for a traction drive transmission, comprising a blend of

(a) at least one branched paraffin oil having an NMR spectrum showing a large peak at 8.58 tau and no more than a minor peak in the area of 8.84–8.85 tau, and

(b) at least one branched paraffin oil having an NMR spectrum showing a large NMR peak in the area of 8.84–8.85 tau, and no more than a minor peak in the area of 8.58 tau.

The base stock can also contain selected naphthenes.

3,595,798
CLEANSING COMPOSITIONS
Tom Smith, Leeds, and John Stewart Lodge, Dewsbury, England, assignors to Lever Brothers Company, New York, N.Y.
No Drawing. Filed Dec. 18, 1967, Ser. No. 691,238
Int. Cl. C11d 7/54
U.S. Cl. 252—95 3 Claims

This invention concerns a solid denture cleanser composition which contains a peroxygen compound and the dye erythrosine. The composition also contains an amino carboxylic acid chelating agent which acts to control the rate at which the colour due to the erythrosine of an aqueous solution of the composition fades.

ERRATUM

For Class 252—99 see:
Patent No. 3,595,968

3,595,799
PICKLING ADDITIVE
Joseph C. Peterson, Indianapolis, Ind., assignor to Crown Chemical Company, Inc., Indianapolis, Ind.
Filed Apr. 1, 1968, Ser. No. 717,667
Int. Cl. C11d 7/34; C23g 1/06
U.S. Cl. 252—137 2 Claims

A pickling additive composition comprising from 20–25% thiourea, 20–25% urea, 20–25% di-ammonium phosphate and 20–25% ethylenediaminetetracetic acid

(EDTA), which, when added to an acid pickling bath, reduces acid consumption by at least 25%.

3,595,800

COMPOSITION AND PROCESS FOR CLEANING NONFERROUS METALS AND THEIR ALLOYS

Theophil J. Wieczorek, West Haven, Conn., assignor to Enthone, Incorporated, New Haven, Conn.

No Drawing. Filed June 26, 1968, Ser. No. 740,019
Int. Cl. C11d *9/30, 7/04;* B21c *35/06*
U.S. Cl. 252—117 11 Claims

Cleaning of metal surfaces and especially the surfaces of nonferrous metals and their alloys, as exemplified by the surfaces of zinc base die castings, to remove difficulty removable foreign deposits therefrom such as, for example, buffing compound residues and other soils, e.g. grease and oil, without any substantial corrosion and discoloration of the metal surface. The ready-to-use liquid cleaning composition comprises one or more soaps from the group of the amine and alkanolamine salts of fatty and rosin acids, an effective amount, sufficient to inhibit corrosion of the metal surface by the cleaning composition, of elemental sulfur, one or more solubilizers for the sulfur, and an aqueous liquid, usually water. Cleaner concentrate compositions adapted to be mixed together with the aqueous liquid to form such ready-to-use cleaning composition, also constitute the present invention.

3,595,801

AQUEOUS DISPERSIONS OF MIXTURES OF BENZOXAZOLE DERIVATIVES AND THEIR USE AS OPTICAL BRIGHTENERS

Günter Rösch, Altenhain, Taunus, Otto Smerz, Kelkheim, Taunus, and Erich Schinzel, Hofheim, Taunus, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed Dec. 9, 1968, Ser. No. 782,478
Claims priority, application Germany, Dec. 29, 1967, P 15 94 855.7
Int. Cl. D06l *3/12*
U.S. Cl. 252—301.2 9 Claims

A mixture of 1,4-naphthalene-bis-(2'-benzoxazoles) and of p-substituted 2-styryl benzoxazoles in the form of an aqueous dispersion shows a higher brightening effect on fibrous materials which are, at least partially, of synthetic origin, than the two components. The two components are used in a ratio of 0.1 to 10 parts by weight of styryl benzoxazole per each part by weight of naphthalene derivative.

3,595,802

DIVALENT EUROPIUM ACTIVATED BARIUM-STRONTIUM ALUMINATE LUMINESCENT MATERIAL

George Blasse, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 9, 1968, Ser. No. 782,277
Claims priority, application Netherlands, Dec. 12, 1967, 6716848
Int. Cl. C09k *1/66*
U.S. Cl. 252—301.4R 3 Claims

Bivalent europium activated barium or barium-strontium luminescent aluminate useful in mercury vapor lamps.

3,595,803

METHOD FOR GROWING OXIDE SINGLE CRYSTALS

Cortland O. Dugger, 118 Fayerweather St., Cambridge, Mass. 02138

No Drawing. Continuation-in-part of application Ser. No. 619,132, Feb. 24, 1967. This application Sept. 4, 1969, Ser. No. 855,426
Int. Cl. C09k *1/68*
U.S. Cl. 252—301.4 9 Claims

A method for forming stoichiometrically proportioned refractory oxide single crystals from a mixture of a cationic halide such as magnesium fluoride and a cationic oxide such as aluminum oxide, in which the cations from both the halide and the oxide form the multiple cationic components of the resultant crystalline material. The method involves the steps of heating the mixture to a temperature slightly above its melting point for about one hour to effect an apparent hydrolysis of the halide and form a homogenous melt followed by the step of cooling the melt within a programmed cooling rate range of from about 0.5° C. per hour to about 10° C. per hour to a temperature which is slightly above the solidification point of the melt.

3,595,804

METHOD FOR PREPARING ZINC AND ZINC-CADMIUM SULFIDE PHOSPHORS

Joseph S. Martin, Jr., Lancaster, Pa., assignor to RCA Corporation

No Drawing. Filed Oct. 30, 1968, Ser. No. 771,984
Int. Cl. C09k *1/12*
U.S. Cl. 252—301.6S 5 Claims

A method for preparing zinc and zinc-cadmium sulfide phosphors including placing in a covered container a mixture of zinc sulfide or zinc-cadmium sulfide, an activator quantity of copper or silver as a compound thereof, an activator quantity of aluminum as a compound thereof, a minor proportion of sulfur and a minor proportion of carbon. The mixture is heated to its reaction temperature and then cooled. After cooling, whatever carbon remains is removed as by screening the batch through a screen.

3,595,805

STEAM REFORMING WITH PRELIMINARY HYDRODESULFURIZATION

Johann Gunther E. Cohn, West Orange, and William C. Pfefferle, Middletown, N.J., assignors to Englehard Minerals & Chemicals Corporation, Newark, N.J.

Filed July 17, 1968, Ser. No. 745,439
Int. Cl. C01b *1/16*
U.S. Cl. 252—373 4 Claims

A combination process for the desulfurization and steam reforming of normally liquid hydrocarbons wherein the hydrogen required for desulfurization is obtained from the steam reforming reaction product and introduced into the feed to the desulfurizer by diffusion through a non-porous hydrogen-permeable membrane.

3,595,806

METHOD FOR THE PRODUCTION OF ACTIVATED CARBON BY PARTIAL OXIDATION OF ATOMIZED CELLULOSE PULPING LIQUOR

Steven Prahacs, Dollard des Ormeaux, Quebec, Hugh G. Barclay, Dorval, Quebec, and Jean J. O. Gravel, Montreal, Quebec, Canada, assignors to Pulp and Paper Research Institute of Canada, Pointe Claire, Quebec, Canada

Filed Nov. 27, 1968, Ser. No. 779,578
Claims priority, application Canada, Aug. 21, 1968, 28,069
Int. Cl. C01b *31/08*
U.S. Cl. 252—421 28 Claims

A process for the production of finely divided carbon, activatable by aqueous and/or acid leaching, from concentrated spent pulping liquor in a single high temperature stage which process comprises passing the spent liquor under pressure through at least one atomizing nozzle into a reactor chamber to form at least one high velocity atomizet spray of finely divided liquid droplets intimately admixed with a free oxygen containing gas in an amount sufficient to effect a selected partial oxidation of the carbonaceous material in said liquor, said reaction chamber being maintained at a high temperature sufficient to effect said selected partial oxidation, each

atomized spray being passed in said chamber through an open-ended tube substantially coaxial with said spray and spaced from but adjacent to each spray nozzle to cause recirculation, by induction of a portion of the hot gaseous products of said partial oxidation to said spray adjacent said nozzle whereby to maintain the reaction temperature of said partial oxidation of the carbonaceous material in said liquor.

3,595,807

LIQUID CATALYST COMPOSITIONS AND THEIR USE IN THE PRODUCTION OF VINYL ACETATE FROM ETHYLENE

John D. Rushmere, Webster Farms, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Jan. 29, 1969, Ser. No. 795,039
Int. Cl. C07c *67/00*
U.S. Cl. 252—429 **2 Claims**

Liquid catalyst compositions containing acetic acid, up to 20 weight percent water, a palladium compound catalyst, and salts to provide: copper, chromic (+3) and potassium cations, and acetate and chloride anions. Also, a cyclic method for producing vinyl acetate wherein such a catalyst composition is reacted with ethylene in a first stage to produce vinyl acetate and form cuprous copper which is reoxidized to the cupric state by reacting the catalyst composition with molecular oxygen in a second stage before the catalyst composition is recycled for re-use in the first stage.

3,595,808

CALCIUM NICKEL PHOSPHATE CATALYSTS AND METHOD OF PREPARING SAME

Hugh C. Bertsch, St. Louis, Mo., and John A. Dreibelbis, Wattsburg, Pa., assignors to Mallinckrodt Chemical Works, St. Louis, Mo.

No Drawing. Filed Dec. 13, 1968, Ser. No. 783,774
Int. Cl. B01j *11/82*
U.S. Cl. 252—437 **5 Claims**

Dehydrogenation catalysts of improved selectivity are prepared by precipitating calcium nickel phosphate at a pH above 7 in the presence of a small amount of manganese, for example 0.1 mole percent based on the combined calcium plus nickel. Advantageously, the precipitation may be carried out at a constant pH. The resulting calcium nickel phosphates are essentially in the form of β-tricalcium phosphate and are substantially free from undesirable hydroxyapatite.

3,595,809

LANTHANUM CHROMIUM FERRITE CATALYST

William L. Kehl, Indiana Township, Allegheny County, Pa., assignor to Gulf Research & Development Company, Pittsburgh, Pa.

No Drawing. Filed June 27, 1969, Ser. No. 837,375
Int. Cl. B01j *11/32, 11/06*
U.S. Cl. 252—462 **9 Claims**

A hydrocarbon conversion catalyst comprising lanthanum, chromium, iron and oxygen in a lanthanum chromium ferrite perovskite-type structure.

3,595,810

ZINC CHROMIUM FERRITE CATALYST

William L. Kehl, Indiana Township, Allegheny County, Pa., assignor to Gulf Research & Chemical Company, Pittsburgh, Pa.

No Drawing. Division and Continuation-in-part of application Ser. No. 493,222, Oct. 5, 1965. This application June 24, 1969, Ser. No. 836,138
Int. Cl. B01j *11/06, 11/32*
U.S. Cl. 252—468 **13 Claims**

A hydrocarbon conversion catalyst comprising zinc, chromium, iron and oxygen in a zinc chromium ferrite spinel-type structure.

3,595,811

METHOD OF PREPARING POLYPHENYLENE POLYMERS

Norman Bilow, Los Angeles, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

No Drawing. Filed Sept. 5, 1967, Ser. No. 665,308
Int. Cl. C08g *33/00*
U.S. Cl. 260—2 **9 Claims**

Method of providing improvement in the manufacture of commercially useful polyphenylene polymers by the polymerization of meta-terphenyl, ortho-terphenyl, biphenyl, quaterphenys other than para quaterphenyl, and mixtures of the same, including mixtures of such compounds with other phenylene oligomers or polyphenyls with from 1 to 5 aromatic rings and the discovery of the use of excess strong Lewis acid polymerization catalyst to oxidant and monomer to effect a viscosity change, improving polymerization conditions and amazingly provided improved yield, better homogeneity and reducing the reaction temperature, and the improved polyphenylene products produced thereby.

3,595,812

CATIONIC POLYMERIZATION OF CYCLIC ETHERS

Jeffrey John Kendall Boulton, Lymm, England, assignor to B.P. Chemicals Limited, London, England

No Drawing. Filed Aug. 11, 1966, Ser. No. 571,707
Claims priority, application Great Britain, Sept. 7, 1965, 38,126/65; Jan. 13, 1966, 1,586/66; Feb. 1, 1966, 4,352/66
Int. Cl. C08g *1/04, 23/04;* C08b *5/04*
U.S. Cl. 260—2 **6 Claims**

Carbonium and oxonium hexafluoro phosphate compounds are used as catalysts in the polymerization of monomeric materials such as cyclic ethers, formals, acetals, N-arylimino compounds, alkyl vinyl ethers, aromatic vinyl compounds and alkenes.

3,595,813

TEXTILE FINISHING COMPOSITIONS

Earl H. Hartgrove, Jr., Parsippany, N.J., assignor to J. P. Stevens & Co., Inc., New York, N.Y.

No Drawing. Filed Aug. 16, 1968, Ser. No. 753,079
Int. Cl. C08g *23/14, 23/20, 25/00*
U.S. Cl. 260—2 **5 Claims**

A method of imparting durable antistatic finish to hydrophobic materials normally susceptible to accumulating electrostatic charges comprising treating said materials in an acid environment with a hydroxy terminated polyfunctional polyoxyalkylene compound and an acid-catalyzed nitrogen-containing crosslinking agent.

3,595,814

URETHANES CONTAINING MONOCARBAMATE CHAIN EXTENDERS

Rodney Frederick Lloyd and George Phillip Speranza, Austin, Tex., assignors to Jefferson Chemical Company, Inc., Houston, Tex.

No Drawing. Filed Nov. 14, 1968, Ser. No. 775,923
Int. Cl. C08g *22/16, 22/44*
U.S. Cl. 260—2.5AM **10 Claims**

The use of monocarbamates as chain extenders in polyurethane compositions provides for the production of polyurethane elastomers having improved tensile strength, tear strength and elongation properties. The use of this class of chain extenders also provides for the production of a foamed polyurethane elastomer having a strong, scuff-resistant integral skin.

3,595,815

SELF-EXTINGUISHING PLASTICS COMPOSITIONS

Herbert Willersinn, Ludwigshafen (Rhine), Germany, Rolf Dieter Rauschenbach, Bombay, India, and Rudolf Ilgemann, Hohensachsen, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Continuation-in-part of abandoned application Ser. No. 437,302, Mar. 4, 1965. This application Nov. 29, 1968, Ser. No. 780,222

Claims priority, application Germany, Mar. 6, 1964, P 12 82 939.9-43

Int. Cl. C08f *47/10, 45/58, 45/62*

U.S. Cl. 260—2.5 4 Claims

Self-extinguishing styrene polymers containing (a) an organic bromine compound and lead naphthenate or (b) an organic chlorine compound and iron naphthenate. The combinations (a) and (b) are exceedingly effective when used as flame-proofing agents.

3,595,816

POLYAMIDE COMPOSITION

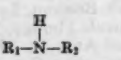
Fred O. Barrett, Cincinnati, Ohio, assignor to Emery Industries, Inc., Cincinnati, Ohio

No Drawing. Filed Jan. 31, 1969, Ser. No. 795,706

Int. Cl. C08g *20/20, 51/60*

U.S. Cl. 260—18 7 Claims

A stabilized polyamide composition prepared from a hydrogenated polymerized fatty acid, a polyfunctional amine, and an oxidation inhibitor having the general formula:



wherein R_1 and R_2 are aryl or substituted aryl radicals.

3,595,817

ORGANOTIN NITRILES AND THEIR USE IN SURFACE-COATING COMPOSITIONS

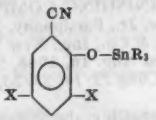
Adolph J. Deinet, Woodcliff Lake, N.J., assignor to Tenneco Chemicals, Inc.

No Drawing. Original application Feb. 19, 1969, Ser. No. 800,741. Divided and this application May 11, 1970, Ser. No. 36,377

Int. Cl. C09d *3/64, 3/74, 5/14*

U.S. Cl. 260—22R 5 Claims

Organotin compounds that have the structural formula



wherein each R represents an alkyl group having from 4 to 8 carbon atoms or a phenyl group; one of the X substituents represents halogen; and the other X substituent represents hydrogen or halogen are effective in the control of the growth of fungi and other micro-organisms in surface-coating compositions.

3,595,818

THERMOPLASTIC MOLDING COMPOSITION CONTAINING POLYESTERS AND ALKALI METAL SALTS OF EPOXYCARBOXYLIC ACIDS

Klaus Weissermel, Kelkheim, Taunus, Hans Deiss, Augsburg, Rudolf Uebe, Hofheim, Taunus, and Rudolf Kern, Mainz, Germany, assignors to Farbewerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed Nov. 28, 1969, Ser. No. 880,907

Claims priority, application Germany, Dec. 5, 1968, P 18 12 944.7

Int. Cl. C08g *17/16*

U.S. Cl. 260—22 9 Claims

Thermoplastic molding compositions suitable for injection -molding of linear saturated polyesters and alkali metal salts of epoxycarboxylic acids, which are distinguished by especially suitable crystallizing properties.

3,595,819

HIGHLY TRANSPARENT SELF-EXTINGUISHING COMPOSITIONS OF METHACRYLATE AND VINYL CHLORIDE RESINS

Ibrahim Dakli and Tommaso Perotti Nigra, Busto Arsizio, and Rinaldo Casiraghi, Milan, Italy, assignors to Montecatini Edison S.p.A., Milan, Italy

No Drawing. Continuation-in-part of application Ser. No. 642,297, May 31, 1967, which is a continuation-in-part of application Ser. No. 354,791, Mar. 25, 1964, both now abandoned. This application July 24, 1968, Ser. No. 747,107

Int. Cl. C08f *29/22*

U.S. Cl. 260—23 6 Claims

Highly transparent, self-extinguishing, thermoplastic compositions having high resistance to chemical reagents and to atmospheric conditions and good resiliency, comprising (1) from about 35–55% by weight of a methacrylate resin containing less than about 0.08% by weight of bivalent sulfur, the resin being made up of a methyl methacrylate homopolymer and/or a copolymer of methyl methacrylate with an alkyl acrylate, the alkyl acrylate content of the copolymer being lower than 5% by weight; (2) from about 45–65% by weight of a vinyl chloride resin made up of a copolymer of vinyl chloride with from about 3% to 5% by weight of 2-ethylhexyl acrylate; (3) from about 0–10% by weight of a non-flammable, organic phosphoric acid salt plasticizer; and (4) lubricants and antioxidants.

3,595,820

PROCESS FOR ENHANCING THE SULFUR RETENTION OF SULFURIZED POLYBUTENES

Marvin J. Den Herder, Olympia Fields, Arthur C. Borg, Chicago, and Paul C. Vienna, Calumet City, Ill., assignors to Standard Oil Company, Chicago, Ill.

No Drawing. Filed Oct. 14, 1968, Ser. No. 767,503

Int. Cl. C08f *47/00*

U.S. Cl. 260—23 7 Claims

In a process for forming sulfurized polybutenes for use in metal working oils including reacting molten sulfur with low molecular weight polybutenes, stripping to remove light undesirable components such as hydrogen sulfide, various mercaptans and unreacted polybutenes, removing entrained sulfur and cooling to ambient conditions, the improvement which comprises enhancing the retention of chemically combined sulfur in such polybutenes by maintaining the pH in the range of about 2.0 to 5.5 for a period of time sufficient to substantially stabilize the chemically combined sulfur content of the sulfurized polybutenes. Suitably, the pH is maintained within the range set forth from after the stripping step until at least the ambient conditions are reached. Continued maintenance of the pH during storage is also desirable.

3,595,821

NEOPRENE BASED ADHESIVES

Sanford Spector, Cranford, Martin M. Grover, Upper Montclair, and Robert Glaser, Piscataway, N.J., assignors to PPG Industries, Inc., Pittsburgh, Pa.

No Drawing. Filed Mar. 30, 1967, Ser. No. 626,975

Int. Cl. C08g *5/22*

U.S. Cl. 260—25 12 Claims

Neoprene-based adhesives comprising (1) three different types of chloroprene polymer, (2) an oil-soluble, heat-hardenable phenol-aldehyde resin, a reaction product of a terpene-phenol resin with such a phenol-aldehyde resin, and/or a metal resinate, and (3) an alkali metal or alkaline earth metal oxide or hydroxide. The three differ-

ent types of chloroprene polymer include a reactive, vulcanizable neoprene; a low softening, high crystallizing neoprene; and a low softening, medium crystallizing neoprene. These adhesives have unique combination of high heat resistance, high immediate strength and long bonding range.

3,595,822
LATEX PAINT COMPOSITIONS
Thomas F. Swank, 21 Hitchinpost Road, Chelmsford, Mass. 01824
No Drawing. Continuation-in-part of application Ser. No. 603,142, Dec. 20, 1966, now Patent No. 3,523,810. This application Oct. 10, 1969, Ser. No. 865,526
Int. Cl. C09d 5/02; C09c 1/36
U.S. Cl. 260—29.6R 9 Claims

This disclosure relates to the use of titanium dioxide coated with a boehmite-type alumina having an average crystallite size of at least about 50 angstroms as a pigment in the preparation of gel-resistant latex paint compositions.

3,595,823
STABLE AQUEOUS EMULSIONS OF STYRENE-ACRYLONITRILE-ACRYLIC TERPOLYMERS
Denis K. Huang, Laurel, Md., assignor to Westvaco Corporation, New York, N.Y.
No Drawing. Filed July 18, 1969, Ser. No. 843,240
Int. Cl. C08f 19/18
U.S. Cl. 260—29.6T 6 Claims

A terpolymer comprising a major amount of styrene, and minor amounts of acrylonitrile and another acrylic material, which has utility as an organic pigment in paper coating compositions. A stable aqueous emulsion of the terpolymer is prepared without the need for conventional protective colloids by use of bulky emulsifiers. The average particle size of the terpolymers produced ranges from about 0.1 to about 0.2 micron.

3,595,824
POLYESTER PLASTICIZER FOR POLYVINYL CHLORIDE FABRICS
Robert D. Aylesworth, Philip A. Froehlich, Thomas B. Hilton, and Herbert G. Rodenberg, Cincinnati, Ohio, assignors to Emery Industries, Inc., Cincinnati, Ohio
No Drawing. Original application Sept. 12, 1966, Ser. No. 578,483, now Patent No. 3,501,554, dated Mar. 17, 1970. Divided and this application Aug. 11, 1969, Ser. No. 870,701
Int. Cl. C08g 39/10, 51/38
U.S. Cl. 260—31.6 4 Claims

The invention relates primarily to drycleanable vinyl fabrics and other vinyl constructions and to novel plasticizers for polyvinyl chloride resins having an improved resistance to extraction in drycleaning solvents, such as perchloroethylene. More particularly, the invention relates to new polymeric plasticizers and polyvinyl chloride resins plasticized therewith. The plasticizers comprise non-chain terminated polyesters having a molecular weight range of from about 1500 to 30,000 resulting from esterification of a dibasic acid-glycol reaction mixture consisting essentially of two or more alkanedioic acids having from 4 to 12 carbon atoms, and two or more different alkylene glycols having from 2 to 6 carbon atoms, at least one having 2 or 3 carbon atoms and at least one having 3 to 6 carbon atoms in which the content of dibasic acids below C_6 is from about 0–50 equivalent percent, the content of C_6 to C_9 dibasic acids is from about 50–100 equivalent percent, and that of C_{10} to C_{12} dibasic acids is from 0–50 equivalent percent, based on the total equivalents of dibasic acid, and the content of C_2 to C_3 and C_3 to C_6 glycols each being from 20–80 equivalent percent based on the total equivalents of glycol in the reaction mixture. The plasticizers of this invention may also include from 1 to about 40% by weight based on the weight of the polyester of a super polyester polymer having a molecular weight of above 15,000.

3,595,825
RESINS AND CATALYST COMPOSITIONS THEREFOR
Russell Alexander Lindsey Miller, Bishopbriggs, Scotland, assignor to Imperial Chemical Industries Limited, London, England
No Drawing. Filed May 10, 1968, Ser. No. 728,322
Claims priority, application Great Britain, May 16, 1967, 22,724/67
Int. Cl. C08g 31/16
U.S. Cl. 260—31.2 11 Claims

The present compositions are provided which are suitable for the production of laminates. The resin composition contains special catalyst system which allows the resin composition to be cured in very short times at low temperatures. Additionally the resin composition provides laminates, which when cured, are very hard and rigid laminates. The composition contains an organopolysiloxane resin having 1 to 1.6 organo groups per silicon atom which are connected to the silicon by a C-Si linkage, a lead salt selected from 2-ethylhexoate and 3,5-trimethylhexoate, butyltin 2-ethylhexoate and iron octoate.

3,595,826
PROCESS FOR PREPARING IMPROVED 2,3-DICHLORO-1,3-BUTADIENE ADHESIVES
Wendell R. Conard, Kent, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio
No Drawing. Filed May 24, 1968, Ser. No. 731,728
Int. Cl. C08c 11/22, 11/24; C09j 3/12
U.S. Cl. 260—33.6 13 Claims

The process described herein comprises an improved method for preparing copolymers of 2,3-dichloro-1,3-butadiene and acrylonitrile to produce adhesive compositions of improved solubility such that the composition does not need to be heated prior to application as is the case in presently known copolymers of this type. The process used herein produces a product of improved solubility by virtue of the fact that the copolymer is prepared by continuous or incremental addition of the dichlorobutadiene monomer as the polymerization proceeds. In this way the copolymers produced toward the end of the copolymerization period closely resemble in molecular weight, monomer distribution and various other properties the copolymers produced at the beginning of the copolymerization. Consequently the resulting copolymer is homogeneous, has improved solubility, can be applied "cold," that is without prior heating, and has excellent adhesive properties.

3,595,827
ETHYLENE INTERPOLYMERS HAVING IMPROVED SLIP AND ANTI-BLOCKING PROPERTIES
George N. Foster, Somerville, N.J., assignor to Union Carbide Corporation, New York, N.Y.
No Drawing. Continuation-in-part of application Ser. No. 843,760, July 22, 1969. This application Nov. 26, 1969, Ser. No. 880,363
Int. Cl. C08f 45/44, 45/04
U.S. Cl. 260—32.6 10 Claims

The slip and anti-blocking properties of ethylene interpolymers have been improved by incorporating therein from about 0.02 to 1.0% by weight of amphipathic secondary fatty acid amides containing from about 20 to 24 carbon atoms and in which the nitrogen atom is substituted with a saturated hydrocarbon radical having from 14 to 26 carbon atoms and 0.01 to about 2.0% by weight of synthetic amorphous silica having a surface

area of about 175 to 400 meters²/g., a pore size of about 80–250 A., and an average particle size of about 0.5 to 8.0 microns.

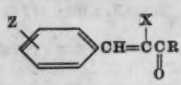
3,595,828

3-PHENYL - 2 - PROPEN-1-ONES AND 3-PHENYL-1-PROPANONES AS BIOSTATS IN PLASTICS, PAINTS AND TEXTILES

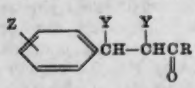
Christian H. Stapfer, Newtown, Pa., assignor to Carlisle Chemical Works, Inc., Reading, Ohio

No Drawing. Filed July 25, 1969, Ser. No. 845,025
Int. Cl. C08f *45/64*; C08k *1/76*; C09d *5/14*
U.S. Cl. 260—45.7 10 Claims

3-phenyl-2-propen-1-ones having the formula:



and/or 3-phenyl-1-propanones having the formula:



wherein R is alkyl, aryl, aralkyl, alkaryl or alkoxyaryl; X is hydrogen, chlorine or bromine; Y is chlorine or bromine; and Z is hydrogen, halogen, alkyl or aryl, are used as active biostats for the protection of poly(vinyl halide) formulations as well as other plastic compositions, textiles, coating compositions and paint compositions against fungi and bacteria.

3,595,829

POLYAMIDES

Geoffrey Spencer Davy, Manchester, England, assignor to Imperial Chemical Industries Limited, London, England

No Drawing. Filed July 29, 1968, Ser. No. 748,212
Claims priority, application Great Britain, Mar. 11, 1968, 11,769/68
Int. Cl. C08g *51/60*
U.S. Cl. 260—45.8 9 Claims

Synthetic linear polyamides are stabilised against the degradative effects of heat by incorporating therewith a stabilising composition, devoid of copper and copper salts, and comprising a mixture of a diphenylamine substituted in each of the positions para to the amino group by an alkyl, cycloalkyl or aralkyl group with a phosphorus acid of the general formula

in which R represents a hydrogen atom, or an alkyl, cycloalkyl, aralkyl, aryl or hydroxyl group, or with a salt or ester of a said acid.

3,595,830

AMINO ORGANOSILANES AS ANTIOZONANTS FOR RUBBERS

William John Owen and Bryan Ewart Cooper, Glamorgan, Wales, assignors to Midland Silicones Limited, Reading, Berkshire, England

No Drawing. Filed July 23, 1969, Ser. No. 844,170
Claims priority, application Great Britain, July 26, 1968, 35,774/68
Int. Cl. C08c *11/66*; C08d *11/04*
U.S. Cl. 260—45.9 5 Claims

The resistance of a vulcanised organic elastomer to ozone is improved by incorporating certain amino organosilanes into the elastomer-forming composition prior to vulcanisation.

3,595,831

TRIPHENYLTIN NONYLPHENOXIDE AS A MICROBICIDE

Wilbur S. Taylor, Norwalk, Conn., assignor to R. T. Vanderbilt Company, Inc., New York, N.Y.

No Drawing. Filed July 10, 1968, Ser. No. 743,598
Int. Cl. C08f *45/64*
U.S. Cl. 260—45.75K 3 Claims

Triphenyltin nonylphenoxide, which is produced by reaction of nonylphenol with triphenyltin hydroxide or bis-(triphenyltin) oxide, is useful as a bactericide and fungicide. It is especially useful as an additive to vinyl formulations and in agricultural uses in foliar applications.

3,595,832

HEAT INITIATED ROOM TEMPERATURE VULCANIZABLE SILICONE ELASTOMER

John P. Szendrey, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

No Drawing. Filed May 19, 1969, Ser. No. 825,967
Int. Cl. C08f *11/04*
U.S. Cl. 260—46.5 4 Claims

A mixture of a vinyl containing polydiorganosiloxane, $RHSiCl_2$, an alkoxylated silicon compound and an organic peroxide is disclosed. The mixture cures to an elastomer after receiving an initial heating step and exposure to moisture. The mixture in the absence of moisture and after the initial heating step is stable and does not cure. A method of vulcanizing the above mixture is also disclosed.

3,595,833

COLD CURING EPOXY RESIN COMPOSITION

Ralph E. Stolton, Tolworth, Surrey, England, assignor to Shell Oil Company, New York, N.Y.

No Drawing. Filed Nov. 4, 1968, Ser. No. 773,308
Int. Cl. C08g *30/14*
U.S. Cl. 260—47 9 Claims

Novel curing compositions useful in curing epoxy resins at low temperatures and having improved storage stability are provided comprising a mixture of (1) an aromatic polyamine, (2) a polyalkene sulfone, (3) a component from the group consisting of dialkyl sulfoxides, cyclohexanone or alkyl substituted cyclohexanones, and (4) salicyclic acid and/or lactic acid.

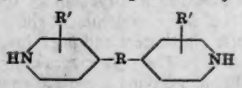
3,595,834

POLYSULFONAMIDES FROM DIPIPERIDYLS

Daniel Ashton Dimmig, King of Prussia, Pa., assignor to Pennwalt Corporation, Philadelphia, Pa.

No Drawing. Filed Feb. 16, 1970, Ser. No. 11,893
Int. Cl. C08g *20/36*
U.S. Cl. 260—49 4 Claims

High molecular weight, substantially amorphous polysulfonamides useful for forming fibers and films are the condensation products of an aromatic disulfonyl chloride and a dipiperidyl compound represented by



where R is lower alkylene and R′ is hydrogen or lower alkyl.

3,595,835

THERMOSTABILIZED LINEAR POLYESTERS OR COPOLYESTERS

Eberhard Pilz, Bobingen uber Augsburg, and Klaus Hoheisel and Eberhard Werner, Wiesbaden-Biebrich, Germany, assignors to Kalle Aktiengesellschaft, Wiesbaden-Biebrich, Germany

No Drawing. Filed Dec. 2, 1968, Ser. No. 780,571
Claims priority, application Germany, Dec. 4, 1967, P 16 94 550.9
Int. Cl. C08g *51/58*
U.S. Cl. 260—45.85 10 Claims

This invention relates to a thermostabilized linear polyester or copolyester containing calcium acetate and phos-

phorous acid in a molar ratio in the range of 1:(0.1 to 0.8) and at least one additional phosphorus-containing stabilizer. The quantity of the phosphorous acid is in the range of 0.005 to 1 percent by weight and the quantity of the additional phosphorus-containing stabilizer is in the range of 0.001 to 5 percent by weight, both calculated on the quantity of the diester component employed.

3,595,836

PROCESS FOR THE PRODUCTION OF A DIMENSIONALLY STABLE POLYESTER FILM AND ARTICLE THEREOF

Wolfgang Korneli, Walter Seifried, and Eberhard Werner, Wiesbaden-Biebrich, Germany, assignors to Kalle Aktiengesellschaft, Wiesbaden-Biebrich, Germany

No Drawing. Filed May 29, 1968, Ser. No. 732,864

Claims priority, application Germany, June 1, 1967, K 62,440

Int. Cl. B29c *25/00;* C08c *19/00;* D01d *5/12*

U.S. Cl. 260—75 3 Claims

This invention relates to a planar, dimensionally stable polyethylene terephthalate film and a process for the production of the said planar, dimensionally stable polyethylene terephthalate film which comprises stretching an amorphous polyethylene terephthalate film, having a mean molecular weight less than 13,500, by at least 200 percent in orthogonal directions of the film plane at a temperature in the range of 85 to 95° C., with a force of not more than 0.5 kg./mm.², and then heating the film under tension to a temperature of at least 200° C. for at least five seconds.

3,595,837

THERMOPLASTIC POLYESTER MOLDING COMPOSITIONS CONTAINING SILICON SPIRANES

Walter Herwig and Ludwig Brinkmann, Frankfurt am Main, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed Jan. 31, 1969, Ser. No. 795,724

Claims priority, application Germany, Feb. 9, 1968, P 16 94 243.1

Int. Cl. C08g *39/04*

U.S. Cl. 260—75 10 Claims

Molding compositions from linear saturated polyesters and silicon spiranes, which may be shaped in the thermoplastic state and from which injection-molded pieces can be made which do not exhibit flash formation.

3,595,838

POLYURETHANE COATING COMPOSITIONS

Akira Ogino, Toyonaka, Japan, assignor to Takeda Chemical Industries, Ltd., Osaka, Japan

No Drawing. Filed May 22, 1968, Ser. No. 731,286

Claims priority, application Japan, May 23, 1967, 42/32,727, 42/32,728

Int. Cl. C08g *22/06, 22/18;* C09d *3/72*

U.S. Cl. 260—77.5 3 Claims

The compositions of the disclosure comprises (1) a polyester polyol and (2) an isocyanate component. By using, as isocyanate component, an adduct of trimethylolpropane and dimethylbenzene - ω,ω' - diisocyanate (XDI) in specified molar ratio (1:7 to 1:16) and essentially free from unreacted XDI, it is possible to produce a two-can type polyurethane coating composition having superior weathering resistance and excellent mechanical properties. Details of desirable polyester polyol components, which contribute improved corrosion resistance to the coating, are also disclosed.

3,595,839

CURABLE COMPOSITIONS OF IMPROVED VERSATILITY AND PROCESS OF PREPARING POLYUREAS

Kenneth B. Stokes, Minneapolis, Minn., assignor to General Mills, Inc.

No Drawing. Filed Feb. 5, 1969, Ser. No. 796,922

Int. Cl. C08g *22/02*

U.S. Cl. 260—77.5 21 Claims

Compositions capable of being cured under a wide variety of conditions comprising an organic polyisocyanate, a ketimine or aldimine blocked polyamine or isocyanate derivative thereof and an inorganic halide hydrate. Process of preparing polyureas from such compositions. The hydrate is of the formula:

$$M_pX_{mxp} \cdot nH_2O$$

where M is the metal ion, X is the halide ion, M is the valence of the metal ion, p is 1 or 2, and n is 1 to 7.

3,595,840

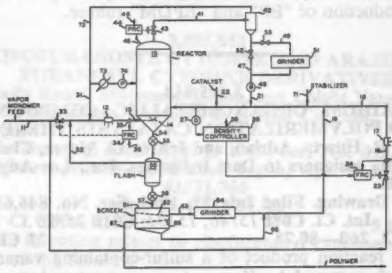
CONTROL OF PARTICLE SIZE IN VINYL MONOMER POLYMERIZATION

Charles W. Moberly and Gerald R. Kahle, Bartlesville, Okla., assignors to Phillips Petroleum Company

Filed Nov. 25, 1968, Ser. No. 778,709

Int. Cl. C08f *1/00, 3/00, 3/30*

U.S. Cl. 260—78.4 8 Claims



A portion of the polymer particles withdrawn from a vapor phase polymerization reactor are ground to produce seed polymer particles which are then impregnated with a catalyst and reintroduced into the polymerization reactor. The portion to be ground can be the particles having a particle size greater than a desired value which are obtained by screening the reactor effluent. Polymer particles below a minimum size can also be returned to the reactor. Stabilizers can be added to the reactor to improve the properties of the polymer.

3,595,841

DIIMINOSUCCINONITRILE AS A VULCANIZATION RETARDER

David Apotheker, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Mar. 14, 1969, Ser. No. 807,412

Int. Cl. C08f *27/06;* C08c *11/40*

U.S. Cl. 260—79.5 7 Claims

Vulcanization with sulfur of a sulfur-curable elastomer in the presence of zinc oxide and an accelerator belonging to the group of lead, cadmium, zinc and ferric salts of certain thioacids is retarded by diiminosuccinonitrile. The thioacids are di(lower alkyl) dithiocarbamic acids, O,O-dialkyl phosphorodithioic acids, and 2-mercaptobenzothiazole.

3,595,842

NOVEL CATALYSTS FOR POLYMERIZATION OF ETHYLENE-ALPHA-OLEFIN DIENE TERPOLYMER RUBBERS

Alberg Schrage, East Orange, and Jules Ernest Schoenberg, Bergenfield, N.J., assignors to Dart Industries Inc., Los Angeles, Calif.

No Drawing. Filed Mar. 5, 1968, Ser. No. 710,643
Int. Cl. C08f *15/40*
U.S. Cl. 260—80.78 9 Claims

Ethylene-alpha-olefin terpolymerization process resulting in products of reduced gel content, in which more particularly, rubbery terpolymers of ethylene, propylene, and a bridged ring diene hydrocarbon are prepared by transition metal catalysts in the presence of gel suppressing compounds consisting of amines, ethers, sulfides, siloxanes or phosphorous compounds or mixtures thereof.

3,595,843

VANADIUM COORDINATION CATALYSTS

James R. Huerta and Amos R. Anderson, Adrian, and Jeffrey G. Meyer, Chelsea, Mich., assignors to Dart Industries, Inc., Los Angeles, Calif.

No Drawing. Filed July 31, 1969, Ser. No. 846,606
Int. Cl. C08f *3/04, 15/04, 15/40*
U.S. Cl. 260—80.78 21 Claims

The reaction product of a vanadium oxide such as vanadium pentoxide and an organophosphate such as triethyl phosphate in the presence of oxygen or an oxygen-containing gas such as air when combined with an organoaluminum halide results in a very active vanadium coordination catalyst. This catalyst is especially useful in the production of "EP" and "EPDM" rubber.

3,595,844

VANADIUM ORGANOMETALLIC COMPOUNDS AND POLYMERIZATION CATALYSTS THEREOF

James R. Huerta, Adrian, and Jeffrey G. Meyer, Chelsea, Mich., assignors to Dart Industries, Inc., Los Angeles, Calif.

No Drawing. Filed July 31, 1969, Ser. No. 846,614
Int. Cl. C08f *15/40, 15/04;* C01b *25/26*
U.S. Cl. 260—80.78 22 Claims

The reaction product of a sulfur-containing vanadium salt such as vanadyl sulfate and an organophosphate, such as triethyl phosphate, results in a hydrocarbon soluble catalyst component. This component forms an active vanadium coordination catlyst when combined with an organoaluminum halide. The resulting vanadium coordination catalyst is especially useful in the production of "EP" and "EPDM" rubber.

3,595,845

POLYMERIZATION OF CYCLIC ALKYLENE OXIDE WITH METHACRYLONITRILE USING AN ORGANOMETALLIC CATALYST

Hideo Tomomatsu, Austin, Tex., assignor to Jefferson Chemical Company, Houston, Tex.

No Drawing. Filed May 5, 1969, Ser. No. 821,983
Int. Cl. C08f *3/78, 7/12*
U.S. Cl. 260—88.7 7 Claims

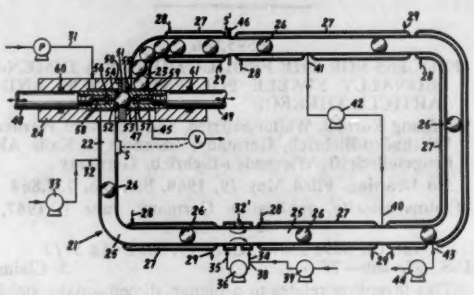
High molecular weight polymers having a high degree of crystallinity are obtained from the copolymerization of cyclic alkylene oxide with methacrylonitrile using a catalyst of an organometallic compound of the formula MZX_{y-1} where M is a metal of zinc, magnesium, cadmium, beryllium or aluminum, Z is an alkylaryl group containing from one to 18 carbon atoms, X is hydrogen, halogen, Z, an alkoxy or aryloxy group containing 1 to 18 carbon atoms, and y is a whole number equal to the valent of M. The polymers obtained by the process of my invention are useful in the elastomer field.

3,595,846

CONTINUOUS CHEMICAL REACTIONS

Georges Rouzier, Clermont-Ferrand, France, assignor to Compagnie des Etablissements Michelin raison sociale Michelin & Cie, Clermont-Ferrand, France

Filed Apr. 29, 1968, Ser. No. 725,102
Int. Cl. C08f *3/68, 1/98;* C08d *1/00*
U.S. Cl. 260—89.5 5 Claims



A continuous chemical reaction is carried out in a closed loop tubular reactor. Spherical separators spaced apart in the tube divide the tube into cells. The cells and separators are propelled past fixed stations at which operations are preformed which influence the chemical reaction. The reaction products are discharged at the end of the tube, and the separators are recovered through a lock and reintroduced at the beginning of the tube.

3,595,847

PROCESS FOR THE PRODUCTION OF SULPHUR-MODIFIED POLYCHLOROPRENES

Rudolf Mayer-Mader, Cologne-Buchheim, Willi Wolff, Schildgen, and Edmund Hüther, Opladen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Dec. 30, 1968, Ser. No. 788,052
Claims priority, application Germany, Jan. 8, 1968, P 17 20 111.5
Int. Cl. C08d *1/09, 5/00;* C08f *27/06*
U.S. Cl. 260—92.3 1 Claim

Process for producing sulphur-modified chloroprene polymers having a predetermined Mooney viscosity by polymerising chloroprene and up to 20% by weight of a comonomer in aqueous emulsion with a peptising agent, where coagulation of the latex is effected immediately after addition of the peptising agent and that the polymer is dried until a Mooney viscosity of 30 to 10 Mooney units above the potential minimum is obtained.

3,595,848

PROCESS FOR THE STABLE AQUEOUS MONOMER DISPERSION POLYMERIZATION AND MIXED POLYMERIZATION OF VINYL CHLORIDE

Herbert Reinecke and Johann Braun, Burghausen, Upper Bavaria, Germany, assignors to Wacker-Chemie GmbH, Munich, Germany

No Drawing. Filed Jan. 9, 1968, Ser. No. 696,515
Claims priority, application Germany, Jan. 20, 1967, W 43,195
Int. Cl. C08f *1/00, 3/30, 15/24*
U.S. Cl. 260—92.8 3 Claims

This invention relates to an improvement in the process for the polymerization of a polymerizate containing at least 80% polyvinyl chloride by stable aqueous monomer dispersion polymerization, the said improvement comprising in that at least during part of the polymerization a reflux condensation of the monomer is effected. This process results in faster polymerization times with better control of particle size of the polymerizate.

3,595,849

POLYMERIZATION CATALYST OF α-OLEFINS

Senji Nakano, Masamitsu Murayama, and Toshinobu Watanabe, Tokyo, and Takehisa Okawa, Kawasaki-shi, Japan, assignors to Mitsubishi Chemical Industries Ltd., Tokyo, Japan

No Drawing. Filed Feb. 29, 1968, Ser. No. 709,235
Claims priority, application Japan, Mar. 9, 1967, 42/14,429; Aug. 7, 1967, 42/50,297; Sept. 18, 1967, 42/59,410
Int. Cl. C08f *1/56, 3/10*
U.S. Cl. 260—93.7 16 Claims

An improved polymerization catalyst for α-olefins formed by mixing a halide of a transition metal having a lower valency than the maximum valency, an organoaluminum compound, and an ion exchange resin.

3,595,850

PROCESS FOR PRODUCTION OF POLYBUTADIENES HAVING IMPROVED TEAR STRENGTH

Motowo Takayanagi, Fukuoka-ken, and Shotaro Sugiura, Teturo Matuura, Haruo Ueno, Fumio Tasaka, Minoru Kono, and Keiichi Tsuji, Yamaguchi-ken, Japan, assignors to Ube Industries Ltd., Yamaguchi-ken, Japan

No Drawing. Filed June 26, 1969, Ser. No. 836,962
Claims priority, application Japan, July 2, 1968, 43/45,615
Int. Cl. C08d *3/06*
U.S. Cl. 260—94.3 8 Claims

A process for the production of polybutadiene, which comprises polymerising butadiene in an inert organic solvent in the presence of a trans-1,4-polymerisation catalyst of an amount such that a trans-1,4-structure accounts for 3–30% of the final polybutadiene, adding a cis-1,4-polymerisation catalyst to this polymerisation system, and polymerising the butadiene further in this system, the trans-1,4-polymerisation and cis-1,4-polymerisation times being adjusted so that the final polybutadiene has a trans-1,4-structure of 3–30% and a cis-1,4-structure of at least 70%.

3,595,851

PROCESS FOR TREATING POLYMERS AND PRODUCT THEREOF

Stephen P. Boutsicaris, Akron, and Robert A. Hayes, Cuyahoga Falls, Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

No Drawing. Continuation-in-part of application Ser. No. 715,521, Mar. 25, 1968. This application Aug. 29, 1969, Ser. No. 854,279
Int. Cl. C08d *5/02*; C08f *27/12, 27/14*
U.S. Cl. 260—94.7 20 Claims

This invention involves a process for preparing hard, tough, heat-resistant plastics of improved adhesion by the peroxide curing of hydroxy and acyloxy derivatives of butadiene liquid polymers having a molecular weight of 1,000–10,000, and having a high vinyl content, using a peroxide which gives free radicals of the structure $R_2(CH_3)CO\cdot$. Although the peroxide curing of butadiene polymers generally results in products having elastomer properties and being swellable in benzene, the process of this invention permits curing of esterified or hydroxylated butadiene polymers to give rigid, heat-resistant polymers of improved adhesion and wettability. The butadiene polymer prior to esterification or hydroxylation has at least 40%, preferably at least 70% by weight butadiene therein, advantageously having at least 60% and preferably at least 80% of the butadiene in the vinyl-type of repeating units, the average molecular weight being 1,000–10,000, preferably 3,000 to 10,000. After esterification or hydroxylation, the content of vinyl-type of repeating unit is at least 50% of the remaining butadiene repeating units. The proportion of peroxide used, preferably dicumyl peroxide, is 0.5–8, preferably 1–7 parts per 100 parts of polymer, and the curing temperature is at least 250° F. (120° C.), preferably 300–350° F. (150–180° C.). This process lends itself to liquid compounding for the incorporation of the peroxide and any modifiers, and for mixing with filler.

3,595,852

MONOAZO DYESTUFFS CONTAINING A THIAZOLYLMERCAPTOALKYLAMINO GROUP

Rasso Hahn, Basel, and Curt Mueller, Binningen, Basel-Land, Switzerland, assignors to Sandoz Ltd. (also known as Sandoz A.G.), Basel, Switzerland

No Drawing. Filed July 1, 1968, Ser. No. 741,338
Claims priority, application Switzerland, July 11, 1967, 9,882/67
Int. Cl. C07c *107/00*; C09b *29/36*; D06p *1/04*
U.S. Cl. 260—158 11 Claims

Disperse dyes of the monazo series with a heterocyclic diazo component and a thiazolyl-mercapto-alkylamino substituted coupling component of the benzene series, having outstanding fastness properties, especially excellent thermofixation fastness. The dyes build up excellently from aqueous dispersions on textiles of fully synthetic or semi-synthetic hydrophobic organic substances of high molecular weight. They are useful for dyeing fibers of linear aromatic polyester, cellulose acetate, cellulose triacetate, synthetic polyamide, polyolefins, acrylonitrile copolymers and polyvinyl compounds.

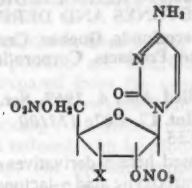
3,595,853

RIBOFURANOSYL CYTOSINE AND ARABINOFURANOSYL CYTOSINE DERIVATIVES

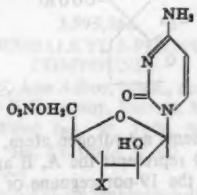
Tadashi Kanai, Motonobu Ichino, and Chiaki Yamashita, Oita-ken, Japan, assignors to Kohjin Co., Ltd., Tokyo, Japan

No Drawing. Filed Apr. 1, 1969, Ser. No. 812,367
Claims priority, application Japan, Apr. 4, 1968, 43/21,760
Int. Cl. C07d *51/52*
U.S. Cl. 260—211.5 5 Claims

The invention relates to ribofuranosyl cytosine derivatives of the formula



or their acid salts in which X stands for OH or ONO_2, and it also relates to arabinofuranosyl cytosine derivatives of the formula



or their acid salts, and it further relates to a process for providing the above arabinofuranosyl cytosine derivatives. The ribofuranosyl cytosine derivatives of the invention are valuable intermediate compounds to provide arabinofuranosyl cytosine.

3,595,854

ACETATE FILAMENTS OF IMPROVED RESISTANCE TO HYDROTHERMAL DELUSTERING AND THE PROCESS FOR PREPARATION THEREOF

Masao Matsuzaki, Matsuyama-shi, Japan, assignor to Teijin Limited, Osaka, Japan

No Drawing. Filed Nov. 26, 1968, Ser. No. 779,271
Claims priority, application Japan, Nov. 28, 1967, 42/76,632
Int. Cl. C08b 3/22
U.S. Cl. 260—230 3 Claims

Cellulose acetate filaments having excellent resistance to hydrothermal delustering in hot water of 110° C. and above, good qualitative reproducibility and practically satisfactory fiber strength, and process for producing such filaments by using cellulose acetate flakes which have been post-treated until their refined parameter at the stability of 0.08% is reduced to no higher than 80.

3,595,855

PROCESS FOR PRODUCING AMINOPENICILLINS

Charles A. Robinson, West Chester, Pa., assignor to American Home Products Corporation, New York, N.Y.

No Drawing. Filed Dec. 5, 1968, Ser. No. 781,582
Int. Cl. C07d 99/16
U.S. Cl. 260—239.1 3 Claims

A process for preparing aminopenicillins in high yield wherein 6-aminopenicillanic acid is silylated with the use of hexamethyldisilazane in methylene chloride at reflux temperature to give monosilylated 6 - aminopenicillanic acid. The reaction mixture is then treated with a weak amine followed by reaction with a suitable organic acid halide hydrohalide. Solvolysis with water or an alcohol is then employed to remove the silyl group thereby to afford a solution of the aminopenicillin hydrohalide, which is then isolated as the aminopenicillin.

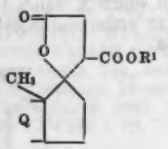
3,595,856

17β-HYDROXY-20,21-PREGNANEDICARBOXYLIC ACID γ-LACTONES AND DERIVATIVES

Yvon Lefebvre, Pierrefonds, Quebec, Canada, assignor to American Home Products Corporation, New York, N.Y.

No Drawing. Filed Apr. 4, 1969, Ser. No. 813,711
Int. Cl. C07c 173/00
U.S. Cl. 260—239.55 22 Claims

There are disclosed herein derivatives of 17β-hydroxy-pregnane-20,21-dicarboxylic acid γ-lactone of the Formula I:



in which R¹ represents a hydrogen atom, a methyl or an ethyl group and Q represents the A, B and C rings of a steroid nucleus of the 19-norpregnane or pregnane series together with the substituents attached thereto. The compounds are prepared by treating the corresponding 17α-[3'-furyl]-17β-hydroxysteroids with an organic peracid in the presence of a nucleophilic reagent, to obtain the corresponding 4,4-dihydroxy-2-butenoic acid lactones attached in position 3 to the 17β-position of the respective steroid; treating said last-named compounds with chromic acid to obtain the correspondingly substituted maleic anhydride derivatives; treating said last-named compounds with zinc and acetic acid to obtain the correspondingly substituted succinic anhydride derivatives; dissolving said last-named compounds in aqueous alkali and treating the solution with excess aqueous acid to obtain the corresponding compounds of Formula I, in which R¹ represents hydrogen; treatment of the latter compounds with diazomethane or diazoethane yields the corresponding methyl or ethyl esters. The compounds are useful as antigonadotrophic agents substantially free from estrogenic effects.

3,595,857

ALUMINUM HALIDE COMPLEXES WITH RIFAMYCINS AND THEIR DERIVATIVES

Joseph Anthony Mollica, Jr., Madison, Carl Richard Rehm, Bridgewater Township, Somerville, and Lincoln Harvey Werner, Summit, N.J., assignors to Ciba Corporation

No Drawing. Filed Nov. 7, 1968, Ser. No. 774,191
Int. Cl. C07d 87/54
U.S. Cl. 260—239.3 4 Claims

Complex salts derived from the rifamycins or their semisynthetic derivatives and aluminum salts exhibit enhanced water solubility.

3,595,858

1H-1,5-BENZODIAZEPINECARBOXAMIDE ANTIINFLAMMATORY AGENTS

James M. McManus, Old Lyme, Conn., assignor to Pfizer Inc.

No Drawing. Filed Oct. 21, 1969, Ser. No. 868,219
Int. Cl. C07d 53/04
U.S. Cl. 260—239.3 9 Claims

A new class of chemotherapeutic agents, 2,3-dihydro-2 - oxo-1H-1,5-benzodiazepine-3-carboxamides, possessing antiinflammatory activity.

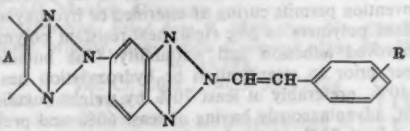
3,595,859

5-ARYLOTRIAZOLYL-2-STYRYL-BENZOTRIAZOLES

Carl-Wolfgang Schellhammer, Opladen, and Wolf-Dieter Wirth, Cologne-Stammheim, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Apr. 8, 1968, Ser. No. 719,722
Claims priority, application Germany, Apr. 17, 1967, F 52,141
Int. Cl. C07d 55/04
U.S. Cl. 260—240 7 Claims

The invention invoives new 5-arylotriazolyl 2-styryl benzotriazoles of the formula



which are useful as optical brightening agents. In the formula R is hydrogen, alkyl, alkoxy, carbalkoxy, acylamino, alkyl sulphonyl, carboxy, CN, an ammonium group, a hydrazinium group or halo, and A stands for the residual members of a mono- or polynuclear aromatic-carbocyclic

ring system which is condensed as indicated with the heterocyclic ring and which may contain further substituents, whereas *n* denotes the numbers 1–3. The various R substituent groups may themselves be further substituted, the preferred substituents on the alkyl groups being OH, CN, halo, alkoxy, carbalkoxyl and carboxyl groups.

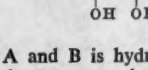
3,595,860

PROCESS FOR PREPARING 4,4'-DIPHTHALIMIDINYL STILBENE COMPOUNDS

George P. Rizzi, Springfield Township, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

No Drawing. Filed Apr. 16, 1969, Ser. No. 816,789
Int. Cl. C07d *27/50*
U.S. Cl. 260—240 10 Claims

A process for preparing 4,4'-diphthalimidinyl stilbene compounds which comprises reacting a phthalide with a 4,4'-diaminostilbene in a molar ratio of phthalide to 4,4'-diaminostilbene of from 0.1:10 to 10:0.1 in the presence of a polyhydric alcohol of the formula



wherein each A and B is hydrogen or hydroxyalkyl of from 1 to 4 carbon atoms; and an aliphatic tertiary amine. The compounds are useful as optical brighteners, particularly in bleach-containing detergent compositions.

3,595,861

NOVEL SYNTHESIS OF 2-QUINAZOLINEPROPIONIC ACIDS AND DERIVATIVES

Stanley C. Bell, Penn Valley, and Peter H. L. Wei, Upper Darby, Pa., assignors to American Home Products Corporation, New York, N.Y.

No Drawing. Filed Dec. 8, 1967, Ser. No. 689,009
Int. Cl. C07d *51/48*
U.S. Cl. 260—251 16 Claims

This invention is concerned with 2-quinazolinepropionic acids, and derivatives thereof, which are pharmacologically efficacious as tranquilizing agents. Further, it relates to 5-hydroxytetrahydropyrroloquinazolinones which are useful intermediates in the preparation of these 2-quinazolinepropionic acids. Still further, it relates to a process for the preparation of these 2-quinazolinepropionic acids and esters. The reaction is effected by contacting an appropriate 2'-carbonyl-3-halopropionanilide (I) with an alkali metal cyanide (II), e.g., sodium and potassium cyanide, and a reactant (III) selected from the group consisting of water, an alkanol and a glycol at a temperature range from about 50° C. to about reflux temperatures for a period of about ten to about twenty-four hours.

3,595,862

ACYLOXYMETHYL DERIVATIVES OF PHENOBARBITAL AND BARBITAL

Julius A. Vida, Canton, Mass., assignor to The Kendall Company, Boston, Mass.

No Drawing. Filed Aug. 5, 1968, Ser. No. 749,973
Int. Cl. C07d *51/20*
U.S. Cl. 260—257 5 Claims

N,N'-bis(acyloxymethyl)phenobarbital, N,N'-bis(acyloxymethyl)barbital, 3-acyloxymethyl diphenylhydantoin, and N,N'-diacyloxy diphenylhydantoin compounds are described as well as therapeutic compositions containing them and their use as anticonvulsant agents.

3,595,863

TETRAHYDROQUINOLINE COMPOUNDS CONTAINING CYANOMETHYLIDINE AND BENZOICSULFIMIDO GROUPS

Clarence A. Coates, Jr., and Max A. Weaver, Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Dec. 2, 1968, Ser. No. 780,577
Int. Cl. C07d *33/10*
U.S. Cl. 260—283CN 7 Claims

Compounds having a 1,2,3,4-tetrahydroquinoline nucleus to which is attached a cyanovinylene group at the 6-position and a 1,2-benzisothiazolin-3-one-1,1-dioxide-alkyl group at the 1-position are useful as dyes for polyester textile materials.

3,595,864

PYRIDYL-3,3-DI-LOWER ALKYL-3,4-DIHYDROISOQUINOLINES

Ernst Seeger, Helmut Teufel, Wolfhard Engel, and Hans Machleidt, Biberach an der Riss, Germany, assignors to Boehringer Ingelheim G.m.b.H., Ingelheim (Rhine), Germany

No Drawing. Filed Mar. 6, 1968, Ser. No. 710,745
Claims priority, application Germany, Mar. 10, 1967, T 33,404
The portion of the term of the patent subsequent to July 21, 1986, has been disclaimed
Int. Cl. C07d *35/36*
U.S. Cl. 260—286 4 Claims

A novel process for the preparation of 1-pyridyl-3,4-dihydro-isoquinolines, which comprises dehydrating a corresponding 2-hydroxy - 1 - pyridyl-1,2,3,4-tetrahydro-isoquinoline.

3,595,865

5-(4-PYRIDYL)-5H-DIBENZO[a,b]CYCLOHEPTENES

John R. J. Sorenson, Morton Grove, and Kurt J. Rorig, Glenview, Ill., assignors to G. D. Searle & Co., Chicago, Ill.

No Drawing. Filed Sept. 12, 1968, Ser. No. 759,495
Int. Cl. C07d *31/20, 31/24*
U.S. Cl. 260—290 6 Claims

5H-dibenzo[a,d]cycloheptenes having a 4-pyridyl substituent at the 5-position are described herein. These compounds are prepared from the appropriate dibenzocyclohepten-5-one and 4-pyridyllithium. This reaction gives the corresponding 5-substituted dibenzocyclohepten-5-ol which is then reduced with hydriodic acid to remove the hydroxy group. The present compounds are useful as anti-convulsants, anti-ulcer agents, and anti-algal agents, and they inhibit germination of seeds of trifolium.

3,595,866

1-AMINO-3-AMINOALKYL-3-PHENYLOXINDOLE-COMPOUNDS

Donald E. Butler, Ann Arbor, Mich., assignor to Parke, Davis & Company, Detroit, Mich.

No Drawing. Filed Jan. 19, 1970, Ser. No. 4,043
Int. Cl. C07d *27/40*
U.S. Cl. 260—293.4 6 Claims

1-amino-3-aminoalkyl-3-phenyloxindoles, in which the 1-amino group is substituted by an aralkyl group and by methyl, ethyl, or allyl and the 3-aminoalkyl group is a dialkylaminoalkyl group or a heterocyclic aminoalkyl group; acid-addition salts thereof; and their production by (1) reacting an alkali metal salt of a 1-amino-3-phenyloxindole with a haloalkylamine, (2) reacting a 1-amino-

3-haloalkyl-3-phenyloxindole with an amine in the presence of a base, (3) reacting a 1-amino-3-(primary amino)alkyl-3-phenyloxindole with an aldehyde and gaseous hydrogen in the presence of a hydrogenation catalyst, and (4) reacting a 1-amino-3-(acylamino)alkyl-3-phenyloxindole with a reducing agent. The compounds of the invention are useful as chemical intermediates and as pharmacological agents that are active primarily as antidiarrheal agents.

3,595,867

2 - PIPERIDINO- AND METHYL-SUBSTITUTED PIPERIDINO-SUBSTITUTED-PHENYL CYCLOALKANE-METHANOLS AND DERIVATIVES

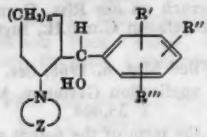
Jacob Szmuszkovicz, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Original application June 13, 1966, Ser. No. 556,892, now Patent No. 3,558,599, dated Jan. 26, 1971. Divided and this application Dec. 23, 1968, Ser. No. 786,385

Int. Cl. C07d *29/16*

U.S. Cl. 260—294.7 16 Claims

Novel 1,3-aminoalcohol of the formula



(IV)

wherein n has the value of 1 to 4, inclusive, wherein

is a heterocyclic amino radical of 5 to 10 nuclear atoms, inclusive, wherein R', R'' and R''' are hydrogen, halogen, alkyl and alkoxy containing from 1 to 6 carbon atoms, inclusive, or CF_3, are prepared. The new compounds of Formula IV per se as well as in the form of acid addition salts have diuretic activity and some of them have antihyperglycemic activity. Compounds of Formula IV are thus useful to provide diuresis in mammals and are also useful as oral antidiabetic agents.

3,595,868

PERBROMOCYANOPYRIDINES AND VAPOR PHASE BROMINATION PROCESS FOR PREPARING THE SAME

Sven H. Ruetman, Walnut Creek, Calif., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed July 18, 1968, Ser. No. 745,711

Int. Cl. C07d *31/46*

U.S. Cl. 260—294.9 11 Claims

Perbromo derivatives of mono- and dicyanopyridines are prepared by contacting vapors of a suitable cyanopyridine and excess bromine at a temperature of from about 500° to about 700° C. The resulting bromination reaction goes forward in a rapid and efficient manner with little carbonization or tar formation. The perbromocyanopyridines are useful as pesticides, particularly for the control of insects and fungi.

3,595,869

PROCESS FOR PREPARING A DIASTEREOMER OF AN OPTICALLY ACTIVE ESTER OR AMIDE OF (CIS-1,2-EPOXYPROPYL)-PHOSPHONIC ACID

Richard F. Shuman, Westfield, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

No Drawing. Filed May 15, 1968, Ser. No. 729,468

Int. Cl. C07d *1/20*

U.S. Cl. 260—297 3 Claims

A process for preparing a diastereomer of an optically-active ester or amide of (cis-1,2-epoxypropyl)phosphonic acid, which comprises separating enantiomers or diastereomers of an ester, an amide or a salt of said ester or amide derivative of (cis-1,2-epoxypropyl)phosphonic acid enantiomers. The derivatives of the optically-active isomers of (cis-1,2-epoxypropyl)phosphonic acid can then be converted to (cis-1,2-epoxypropyl)phosphonic acid enantiomers or a salt thereof. (—) (cis-1,2-epoxypropyl) phosphonic acid and its salts are active antibiotics, which are effective against various gram-negative and gram-positive pathogens.

3,595,870

METAL COMPLEXES OF 2-BENZIMIDAZOLE-CARBAMIC ACID ESTERS

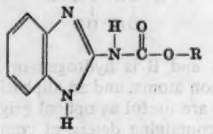
Hein L. Klopping, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Nov. 19, 1968, Ser. No. 777,171

Int. Cl. C07d *47/38*

U.S. Cl. 260—299 4 Claims

Metal complexes prepared by reacting (1) organic compounds having the formula



wherein R is lower alkyl, and (2) metal salts, such as zinc chloride or copper acetate, are useful as fungicides and/or mite ovicides.

3,595,871

PREPARING SUBSTITUTED THIAZOLE-SULFENAMIDES

Robert Henry Campbell, St. Albans, and John Joseph D'Amico, Dunbar, W. Va., assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Aug. 19, 1968, Ser. No. 753,785

Int. Cl. C07d *71/48*

U.S. Cl. 260—306.6 11 Claims

An N-substituted 2-thiazolesulfenamide is reacted with a primary or secondary amine less volatile than the amine from the sulfenamide reactant and the more volatile amine by-product is removed from the reaction zone to obtain a different N-substituted 2-thiazolesulfenamide.

3,595,872

1-(2-BENZOXAZOLYL)BENZOTRIAZOLE AND 1-(2'-BENZOXAZOLYL)-3,5-DIMETHYLPYRAZOLE

Edward W. Pietrusza, Morristown, and Jack R. Pendersen, Parsippany, N.J., assignors to Allied Chemical Corporation, New York, N.Y.

No Drawing. Original application July 24, 1967, Ser. No. 655,298, now Patent No. 3,499,875, dated Mar. 10, 1970. Divided and this application Oct. 1, 1969, Ser. No. 870,966

Int. Cl. C07d *85/48*

U.S. Cl. 260—307 2 Claims

This specification discloses novel benzoxazolyl derivatives selected from the group consisting of 1-(2-benzoxazolyl)benzotriazole, di-(2-benzoxazolyl)thioether, 1 - (2-benzoxazolyl)benzoxazolinone - 2, and 1-(2'-benzoxazolyl)-3,5-dimethylpyrazole. These compounds are effective as promoters for the anionic polymerization of lactams, effecting conversion to high molecular weight polyamides rapidly at temperatures below the polymer melting point.

3,595,873

IMIDAZOLYL PHOSPHINATES AND PHOSPHINOTHIOATES

Paul B. Budde and Henry Tolkmith, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Application May 24, 1968, Ser. No. 731,745, now Patent No. 3,519,639, dated July 7, 1970, which is a continuation-in-part of application Ser. No. 604,177, Dec. 23, 1966. Divided and this application Nov. 3, 1969, Ser. No. 871,379

Int. Cl. C07d *49/36*

U.S. Cl. 260—309 7 Claims

Disclosed are (a) imidazolyl phosphates and phosphorothioates wherein the phosphorus atom additionally bears two substituted phenoxy groups or one substituted phenoxy group and a lower alkylamino group or substituted phenyl group and (b) diimidazolyl phosphates and phosphorothiates wherein the phosphorus atom additionally bears a substituted phenoxy group in which, in each instance, the substituents are from 1 to 3 independent bromo, chloro, cyano, nitro, loweralkoxy, or loweralkyl groups. These compounds are useful as bactericides and fungicides.

3,595,874

3,4,5,10-TETRAHYDROAZEPINO[2,3-b] INDOL-5a (2H)-OLS

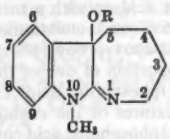
Jackson B. Hester, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Filed Feb. 28, 1969, Ser. No. 803,474

Int. Cl. C07d *27/36*

U.S. Cl. 260—326.3 3 Claims

New 3,4,5,10-tetrahydroazepino[2,3-b]indol-5a(2H)-ols of the formula:



X

wherein R is selected from the group consisting of hydrogen and acetyl, are prepared. These compounds and their pharmacologically acceptable acid addition salts have sedative action and can be used in mammals and birds as tranquilizers.

3,595,875

PREPARATION OF 2-PYRROLIDINONE

John M. Larkin, Wappingers Falls, and Kenneth L. Kreuz, Fishkill, N.Y., assignors to Texaco Inc., New York, N.Y.

No Drawing. Filed Dec. 9, 1968, Ser. No. 782,433

Int. Cl. C07d *27/08*

U.S. Cl. 260—326.5 11 Claims

A method for preparing 2-pyrrolidinone by contacting 5-nitro-3-pentanone with an acidic oxidizing agent thereby forming 4-nitrobutyric acid and thereafter hydrogenating the 4-nitrobutyric acid in an alcoholic medium in the presence of a minor amount of a mineral acid and a hydrogenating catalyst at temperatures ranging from about 20 to 200° C. and under hydrogen pressures of from 1 to 100 atmospheres. The product 2-pyrrolidinone contemplated herein is useful as a solvent for polymers, insecticides and petroleum processing and separations, as a plasticizer for acrylic polymers and copolymers, as a decolorizing agent, and as a monomer for forming a polyamide.

3,595,876

SPIRO-AZATETRAMETHYLENE DERIVATIVES

Cornelis Albertus de Bock and Joseph Lucas Maria Antonius Schlatmann, Van Houtenlaan, Weesp, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

No Drawing. Filed July 3, 1968, Ser. No. 742,130

Claims priority, application Netherlands, July 6, 1967, 6709380; Apr. 5, 1968, 6804904

Int. Cl. C07d *27/04*

U.S. Cl. 260—326.8 6 Claims

Spiro-azatetramethylene derivatives of adamantane have been found to have useful antivirus properties.

3,595,877

2-OXA-STEROID AND THE PRODUCTION THEREOF

Robert Bucourt and Lucien Nedelec, Clichy-sous-Bois, France, assignors to Roussel-UCLAF, Paris, France

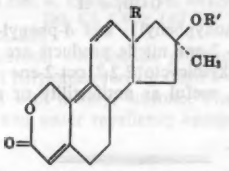
No Drawing. Filed Aug. 14, 1968, Ser. No. 752,467

Claims priority, application France, Aug. 17, 1967, 118,090, 118,091; Dec. 7, 1967, 131,343; Mar. 7, 1968, 142,767

Int. Cl. C07d *7/20*

U.S. Cl. 260—343.2 11 Claims

2-oxa-13β-R-17α-methyl-$\Delta^{4,9,11}$-gonatrienes of the formula



(I)

wherein R is selected from the group consisting of methyl and ethyl and R′ is selected from the group consisting of hydrogen, saturated alkyl of 1 to 5 carbon atoms which may contain a hetero oxygen atom, unsaturated alkyl of 2 to 5 carbon atoms, cycloalkyl of 3 to 5 carbon atoms which may contain a hetero oxygen atom, with the proviso that R is ethyl when R′ is hydrogen which compounds possess anabolic and androgenic activity. The invention also relates to a novel process and novel intermediates for the preparation of the compounds of Formula I.

3,595,878

METHOXYPHENYL- AND PHENYL-DIALKYL-α-PYRONE NITRILES

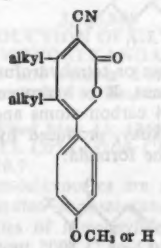
Kyu Tai Lee, Kingsridge, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Jan. 29, 1969, Ser. No. 795,059

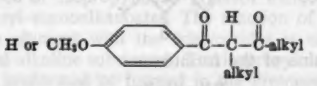
Int. Cl. C07d *7/16*

U.S. Cl. 260—343.5 12 Claims

Preparing a compound of the formula:

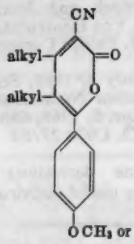


by admixing a diketone compound of the formula:



and ethyl cyanoacetate in the presence of a catalytic amount of ammonium acetate and glacial acetic acid;

and thereafter via an ethylene addition reaction with a compound of the formula:



producing a compound of the formula:

The 4-(p-methoxyphenyl)- and 4-phenyl-2,3-dialkylbicyclo[2.2.2]oct - 2-ene nitrile products are intermediates for making dialkylbicyclo[2.2.2]oct-2-ene and octane-1 carboxylic acids, useful as antifertility or anti-implantation compounds.

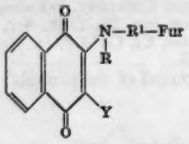
3,595,879

NAPHTHOQUINONE DERIVATIVES, PREPARATION THEREOF AND CHEMOTHERAPEUTIC COMPOSITIONS THEREWITH AND THEIR ADMINISTRATION

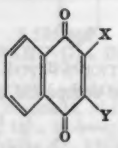
Siegfried Petersen, Leverkusen, and Dieter Tettenborn and Lieselotte Juhling, Wuppertal-Elberfeld, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Oct. 7, 1968, Ser. No. 765,661
Claims priority, application Germany, Oct. 10, 1967, F 53,724
Int. Cl. C07d *5/04, 5/16*
U.S. Cl. 260—347.7 **23 Claims**

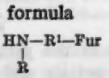
New and chemotherapeutically active naphthoquinone derivatives are provided of the formula:



wherein Fur is a furan or tetrahydrofuran radical lower alkyl substituted or not, R is hydrogen or lower alkyl, R^1 is alkylene of 1–4 carbon atoms and Y is hydrogen, halogen or lower alkoxy, produced by reacting a 1,4-naphthoquinone of the formula:



with an amine of the formula



wherein Fur, R, R^1 and Y have the above meaning and X is hydrogen, halogen or lower alkoxy. The compounds are useful as bactericides, fungicides and anti-tumour agents for animals excluding humans. Representative compounds are 2-furfuryl-amino-1,4-naphthoquinone and the -3-chloro- and -3-methoxy-analogs.

3,595,880

PREPARATION OF (CIS-1,2-EPOXYPROPYL) PHOSPHONIC ACIDS

Raymond A. Firestone, Fanwood, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

No Drawing. Filed May 15, 1968, Ser. No. 729,376
Int. Cl. C07d *1/20, 1/22*
U.S. Cl. 260—348 **6 Claims**

Process for the preparation of (cis-1,2-epoxypropyl) phosphonic acids, esters or salts thereof which comprises eliminating or extruding sulfur dioxide, sulfur trioxide, carbon monoxide or nitrogen from an appropriately substituted 1,3-oxathietane S,S-dioxide compound, 1,3,4-dioxathiol S,S-dioxide compound, 3-oxo oxetan compound and 1,3,4-oxadiazoline compound, respectively. The 1,2-epoxypropyl phosphonic acids or salts thereof are active antibacterial agents.

3,595,881

PROCESS FOR SEPARATING ENANTIOMERS OF (CIS-1,2-EPOXYPROPYL)PHOSPHONIC ACID

Richard F. Shuman, Westfield, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

No Drawing. Filed May 15, 1968, Ser. No. 729,404
Int. Cl. C07d *1/20*
U.S. Cl. 260—348 **9 Claims**

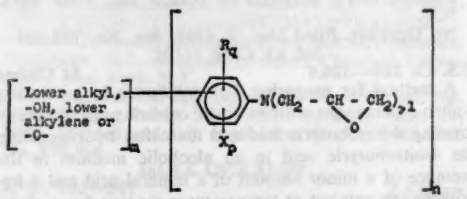
Mixtures of (+) and (−) (cis-1,2-epoxypropyl)-phosphonic acid or a salt thereof are reacted with a metal salt of an optically-active acid or with a metal salt of a mixture of optically-active acid enantiomers to produce a metal salt of (cis-1,2-epoxypropyl)phosphonic acid containing a greater proportion of one of the enantiomers of (cis-1,2-epoxypropyl)phosphonic acid. The process is useful for preparing mixtures of the enantiomeric forms of (cis-1,2-epoxypropyl)phosphonic acid containing a greater proportion of the (−) enantiomer, which is an antibiotic substance active against various gram-positive and gram-negative pathogens.

3,595,882

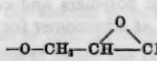
PROCESS FOR PREPARING HALOGENATED AMINE POLYEPOXIDES

Bart J. Bremmer, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Oct. 24, 1968, Ser. No. 770,435
Int. Cl. C07d *1/04*
U.S. Cl. 260—348.6 **2 Claims**



Wherein lower alkyl is alkyl of up to four carbon atoms; *m* is an integer, zero or one; X is chloro or bromo; *p* is an integer from 1 to [5−(*q*+*m*)]; R is a moiety



and q is an integer, zero to two; and n is one or two, and process for preparing the compounds which comprises reacting an amino aromatic compound with epichlorohydrin, with opening of the oxirane ring; halogenation, and ring closure.

3,595,883

PROCESS FOR THE PREPARATION OF 14β-HYDROXY - 17 - KETO - 15 - ANDROSTENES AND NOVEL INTERMEDIATES PRODUCED THEREBY

Adriano Afonso, East Orange, N.J., assignor to Schering Corporation, Bloomfield, N.J.

No Drawing. Filed June 16, 1969, Ser. No. 833,704
Int. Cl. C07c *169/20*
U.S. Cl. 260—397.45 17 Claims

14β - hydroperoxy - 15-androsten-17-ones, prepared by the action of oxygen on 14-androsten-17-ones, upon treatment with a mild reducing agent yields 14β-hydroxy-15-androsten-17-ones, useful intermediates in the synthesis of steroidal cardenolides.

Preferred species are 14β-hydroperoxy-5α-15-androsten-3β-ol-17-one 3-acetate and the 5β-epimer thereof (prepared by the action of oxygen on 5α-14-androsten-3β-ol-17-one 3-acetate and the 5β-epimer thereof, respectively) each of which, upon mild reduction, preferably with triethyl phosphite, yields 14β-hydroxy-5α-15-androsten-3β-ol-17-one 3-acetate and the 5β-epimer thereof, respectively, which are useful intermediates in the synthesis of uzarigenin and digitoxigenin, respectively.

3,595,884

NOVEL 3-ENOL ETHERS OF 17α-HALOETHYNYL 19-NOR ANDROSTENES AND METHODS FOR THE PREPARATION OF SAME

John Fried, Plainfield, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

No Drawing. Continuation of application Ser. No. 99,668, Mar. 31, 1961, which is a continuation-in-part of application Ser. No. 88,575, Mar. 2, 1961. This application Dec. 15, 1969, Ser. No. 885,363
Int. Cl. C07c *169/08*
U.S. Cl. 260—397.4 17 Claims

This invention is concerned generally with novel steroid compounds and processes of preparing the same. More particularly, it relates to novel 3-enol ethers of 21-halonorethisterones and their $\Delta^{5(10)}$-isomers, and to processes for preparing these new compounds starting with 3-methoxy - 2,5(10) - androstadiene - 17 - one. The 21-halonorethisterones, their $\Delta^{5(10)}$ - isomers, and 3-enol ethers thereof, subject of the present invention, possess useful therapeutic properties as orally and parentally active progestational agents.

3,595,885

ORGANOPOLYSILOXANES AND THE PROCESS FOR THEIR PREPARATION

Gerd Rossmy, Essen-Werden, and Gotz Koerner, Mulheim (Ruhr), Germany, assignors to Th. Goldschmidt A.G., Essen, Germany

No Drawing. Continuation-in-part of abandoned application Ser. No. 431,448, Feb. 9, 1965. This application Nov. 26, 1968, Ser. No. 779,209
Claims priority, application Germany, Feb. 12, 1964, P 14 95 961.6
Int. Cl. C09f *5/08*; C07f *7/08, 7/18*
U.S. Cl. 260—398R 15 Claims

An equilibrated mixture of compounds of the average formula

$$R_xSiO_y(SO_4)_zX_{4-(x+2y+2z)}$$

wherein R is a member selected from the group consisting of alkyl of from 1 to 6 carbon atoms, chloropropyl, vinyl, allyl, benzyl, phenyl and chlorophenyl;

Ac is acyl derived from a carboxylic acid of not more than 2 carboxylic groups and selected from the group consisting of mono- and dibasic aliphatic saturated carboxylic acids, mono- and dibasic aliphatic unsaturated carboxylic acids, mono- and dibasic aromatic carboxylic acids, chloroacetic acid, thioglycolic acid and anthranilic acid, x and y being defined by

$$x=1.01-2.1$$
$$y=0.5-1.3 \text{ and}$$
$$4>(x+2y)>2$$

A process of preparing the equilibrated mixture is also disclosed. Organopolysiloxanes of the general formula

$$R_xSiO_y(SO_4)_zX_{4-(x+2y+2z)}$$

wherein R, x and y have the above meaning, X is halogen and z=0.0001–0.2, are reacted with (a) carboxylic acid, (b) carboxylic acid salts, (c) anhydride of carboxylic acid or mixtures of (a), (b) and (c).

3,595,886

NOVEL FLUOROCARBON DERIVATIVES

Richard F. Sweeney, Dover, and Koei-Liang Liauw, Morristown, N.J., assignors to Allied Chemical Corporation, New York, N.Y.

No Drawing. Original application Aug. 25, 1965, Ser. No. 482,597, now Patent No. 3,446,570. Divided and this application Jan. 6, 1969, Ser. No. 801,904
Int. Cl. C07c *143/90*
U.S. Cl. 260—401 8 Claims

Polyfluorocarbon compounds prepared by reacting a perfluoroalkyl polyamide having from 3–17 perfluorinated carbon atoms with a vinyl sulfone. The compounds are useful as oil and water repellency agents for textiles.

3,595,887

HYDROGENATION OF POLYMERIC FAT ACIDS

Madhukar V. Kulkarni and Russell L. Scheribel, Kankakee, Ill., assignors to General Mills, Inc.

No Drawing. Filed Aug. 12, 1968, Ser. No. 751,701
Int. Cl. C11c *3/12*
U.S. Cl. 260—409 16 Claims

There is disclosed an improved method of hydrogenating polymeric fat acids employing a two step process comprising first hydrogenating with a nickel catalyst followed by a second hydrogenation with a palladium catalyst. An optional acid treatment step between the two hydrogenation steps is also disclosed which involves treatment with an acid and an acid activated clay. The final products are useful in preparing polymers such as polyesters, diisocyanates, ester based urethanes, polyamides, and epoxy resins, which find utility in adhesives, coatings, castings, laminates, can sealants and inks.

3,595,888

PRODUCTION OF GLYCERYL MONOALKANOATES

Raymond Reiser and Arthur Furman Isbell, College Station, Tex., assignors to Research Corporation, New York, N.Y.

No Drawing. Filed May 13, 1968, Ser. No. 728,823
Int. Cl. C07d *13/04*; C11c *3/04*
U.S. Cl. 260—410.7 6 Claims

Glyceryl monoalkanoates are made by heating triglycerides of saturated or unsaturated alkanoic acids with at least two moles of isopropylidene glycerol at from about 100° to about 200° C. and hydrolyzing the monoalkanoates of isopropylidene glycerol thereby produced to glyceryl monoalkanoates. The reaction of the isopropylidene glycerol with the triglycerides is catalyzed by acids and alkaline substances. The isopropylidene glycerol may be preformed or formed in the presence of the triglycerides by condensation of glycerol and acetone by azeotropic distillation of water of condensation.

3,595,889

ESTERS OF POLYHYDRIC ALKANOLS AND ACID-SUBSTITUTED AROMATIC COMPOUNDS

Stephen J. Wayo, Whiting, Ind., assignor to Atlantic Richfield Company, New York, N.Y.

No Drawing. Original application Sept. 3, 1965, Ser. No. 485,077, now Patent No. 3,337,460. Divided and this application Mar. 28, 1967, Ser. No. 640,764

Int. Cl. C10m *3/14*; C11c *3/00*

U.S. Cl. 260—410.6 7 Claims

Oil-soluble polymeric esterification products of polyhydric alcohols having at least 3 up to about 6 hydroxy groups reacted with the reaction product of a monoolefinically unsaturated fatty acid of about 12 to 24 carbon atoms with an aromatic hydrocarbon are disclosed. The esterification products are useful as pour point depressors for mineral oils.

3,595,890

VANADIUM ORGANOPHOSPHATES

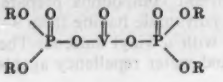
James R. Huerta and Amos R. Anderson, Adrian, and Jeffrey G. Meyer, Chelsea, Mich., assignors to Dart Industries, Inc., Los Angeles, Calif.

No Drawing. Filed June 24, 1969, Ser. No. 836,169

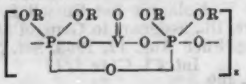
Int. Cl. C07f *9/00*

U.S. Cl. 260—429R 14 Claims

Vanadium organophosphates represented by the formula:



and polymers thereof represented by the formula:



wherein x is 2 to 6, R is an alkyl or an alkyl ether having 1 to 16 carbon atoms or an aryl having up to 16 atoms, or mixtures thereof, can be prepared by a reaction between a vanadium oxide, oxyhalide, or halide or an alkyl vanadate and a trialkyl, trialkyl ether or a triaryl phosphate. A mixture of the vanadium organophosphate and an organoaluminum halide forms an active vanadium coordination catalyst. This catalyst is especially useful in the production of "EP" and "EPDM" rubber. A particularly effective vanadium coordination catalyst comprises vanadium (IV) oxybis·(diethyl phosphate) and an organoaluminum chloride.

3,595,891

PROCESS FOR HYDROCARBON SOLUBLE METAL SALTS

Stanley Bruce Cavitt, Austin, Tex., assignor to Jefferson Chemical Company, Inc., Houston, Tex.

No Drawing. Filed Sept. 17, 1969, Ser. No. 858,861

Int. Cl. C07f *9/00, 11/00*

U.S. Cl. 260—429 8 Claims

Hydrocarbon-soluble organic metal salts of molybdenum, tungsten and vanadium are prepared by reacting the inorganic metal oxide or acid of molybdenum, tungsten or vanadium with a liquid alkoxyacetic acid to form an organic-soluble intermediate and then reacting the intermediate with a carboxylic acid. The compounds prepared by the process of this invention are useful as catalysts for the epoxidation of olefins, as lubricant additives, or as metal plating agents.

3,595,892

PROCESS FOR THE PRODUCTION OF ALKYL- OR CYCLOALKYL TIN HALIDES

Jan W. G. van den Hurk, Utrecht, Netherlands, assignor to Nederlandse Centrale Organisatie voor Toegepast-Natuurwetenschappelijk Onderzoek, The Hague, Netherlands

No Drawing. Filed July 15, 1968, Ser. No. 744,701

Claims priority, application Netherlands, July 18, 1967, 6709983

Int. Cl. C07f *7/22*

U.S. Cl. 260—429.7 7 Claims

This invention relates to an improved process for the production of alkyl- or cycloalkyl tin halides by the direct reaction of metallic tin with alkyl- or cycloalkyl halides, comprising carrying out the reaction in the presence of an organo-antimony compound, or a mixture consisting of organo-antimony compounds as a catalyst.

3,595,893

REACTION PRODUCT OF A DIALKYLTIN DIFLUORIDE AND A DIALKYLTIN SULFIDE AND THE PROCESS THEREOF

Arnold Schroeder, Pamontstraat 8, Deventer, Netherlands, and Paulus G. J. Nieuwenhuis, Adelaarslaan 219, Apeldoorn, Netherlands

No Drawing. Original application Oct. 23, 1967, Ser. No. 677,067, now Patent No. 3,522,206, dated July 28, 1970. Divided and this application Aug. 27, 1969, Ser. No. 871,010

Claims priority, application Netherlands, Nov. 9, 1966, 6615781

Int. Cl. C08f *45/62, 7/22*

U.S. Cl. 260—429.7 7 Claims

The present invention relates to a process for stabilizing polyvinyl chloride, and other polymers and copolymers which contain halogen, with a reaction product obtained from a dialkyl-tin-difluoride and a dialkyl-tin-sulphide, the reaction product being employed either as such or formed in situ.

3,595,894

ORGANOSILICON COMPOUNDS

Edwin Ian Gilbert Brown and James Jack, Stevenston, Scotland, and Edward Jervis Vickers, Manchester, England, assignors to Imperial Chemical Industries Limited, London, England

No Drawing. Filed Aug. 5, 1968, Ser. No. 750,022

Claims priority, application Great Britain, Aug. 7, 1967, 36,146/67

Int. Cl. C07f *7/02, 7/04*

U.S. Cl. 260—448.2B 6 Claims

Silanes and siloxanes of the general formula

$$R^2R^3R^4Si—R—[(OC_nH_{2n})_xOR'COOR'']_y$$

where R is a radical free from the olefinic unsaturation and of a valency 2 to 4 selected from the group consisting of hydrocarbon radicals having from 3 to 11 carbon atoms and radicals consisting of carbon, hydrogen and oxygen having from 7 to 17 carbon atoms, the oxygen being present in the form of ether linkages, R′ is a divalent saturated hydrocarbon radical having not more than 4 carbon atoms, R″ is selected from the group consisting of lower alkyl radicals and polyoxyalkylene residues of the general formula $(C_bH_{2b}O)_zR'''$ where b is 2, 3 or 4, z is a positive integer and R‴ is selected from the group consisting of lower alkyl groups and cycloalkyl groups, n is 2, 3 or 4, X is 0 or a positive integer, $y+1$ is the valency of the radical R and R^2, R^3 and R^4 are selected from the group consisting of lower alkyl and lower alkyl-siloxanyl groups. These compounds find utility as surfactants in the manufacture of polyurethane foams and as lubricants for textile fibres.

3,595,895

NOVEL DISILOXANE COMPOUNDS

Richard P. Bush and Christopher Arthur Pearce, Glamorgan, Wales, assignors to Midland Silicones Limited, Reading, Berkshire, England

No Drawing. Filed Sept. 23, 1968, Ser. No. 761,814
Claims priority, application Great Britain, Oct. 5, 1967, 45,558/67
Int. Cl. C07f 7/02
U.S. Cl. 260—448.2N 11 Claims

Novel disiloxane compounds of the general formula $(R_3Si)_2NSiR'_2OSiR''_2X$ wherein R repersents hydrogen, an alkyl, alkenyl or a monocyclic aryl radical, R' being an alkyl or alkenyl or a monocyclic aryl, R'' being a monovalent hydrocarbon radical and X being hydrogen, a halogen, an alkoxy, a hydroxyl, or a $—NR_2'''$ radical wherein R''' is defined above as R and process of preparing thereof are included in this invention. The disiloxanes are useful as intermediates in the preparation of other organosilicon products or in the modification of organic compounds by reaction therewith.

3,595,896

METHOD FOR THE HYDROLYSIS OF ORGANOHALOGENOSILANES

Siegfried Nitzsche, Ferdinand Gerstner, and Rudolf Strasser, Berghausen, Upper Bavaria, Germany, assignors to Wacker-Chemie G.m.b.H., Munich, Bavaria, Germany

Filed Aug. 15, 1969, Ser. No. 850,513
Claims priority, application Germany, Aug. 20, 1968, P 17 95 182.5
Int. Cl. C07f 7/02; C08g 31/38
U.S. Cl. 260—448.2E 13 Claims

A continuous method for hydrolyzing halogenosilanes wherein the water employed for hydrolysis is admixed with silane hydrolyzates and acts as a scrubbing stream on the halogenosilanes.

ERRATUM

For Class 260—448 see:
Patent No. 3,595,733

3,595,897

ADDITION OF HYDROGEN CYANIDE TO ORGANOSILICON COMPOUNDS CONTAINING UNSATURATED SUBSTITUENTS

Earle S. Brown, South Charleston, W. Va., Frank D. Mendicino, Marietta, Ohio, and Edward. A Rick, Charleston, W. Va., assignors to Union Carbide Corporation, New York, N.Y.

No Drawing. Filed Nov. 12, 1968, Ser. No. 775,101
Int. Cl. C07f 7/02, 7/04
U.S. Cl. 260—448.2E 16 Claims

A homogeneous liquid phase process which comprises contacting hydrogen cyanide and an organosilicon compound containing at least one unsaturated substituent in the presence of a zero-valent nickel, palladium or platinum complex, under such conditions of temperature and pressure as to maintain a liquid phase reaction mixture. In a preferred embodiment, excess, non-reactive ligand is added to the reaction mixture in such an amount that the ratio of moles of excess ligand (which can be the same as or different from the ligand in the catalyst complex) to moles of HCN is varied within the range of 0.1 to 1 to 25 to 1 in order to greatly increase the turnover of the catalyst, i.e., number of moles of product per mole of catalyst.

3,595,898

PERESTERS BY REACTION OF CARBOXYLIC ACIDS WITH ORGANIC HYDROPEROXIDES

Robert Joseph Harvey and Charles Nathan Winnick, Teaneck, N.J., assignors to Halcon International, Inc.

No Drawing. Filed Mar. 11, 1968, Ser. No. 711,860
Int. Cl. C07c 69/00
U.S. Cl. 260—453 10 Claims

This invention relates to a process for the manufacture of peresters and more particularly to such a process wherein the peresters are prepared by reaction between an organic hydroperoxide and a carboxylic acid. In particularly preferred embodiments, this invention relates to processes for the manufacture of tertiary alkyl peresters and to secondary and tertiary aralkyl peresters. Thus, this invention is especially applicable to the manufacture of such peresters as, for example, t-butyl peracetate, t-butyl perbenzoate, ethylbenzyl perpivalate and cumyl perisobutyrate.

3,595,899

2 - (PHENYLALKYLAMINO)ETHANETHIO-SULFURIC ACIDS AS ANTIRADIATION AGENTS

Daniel L. Klayman, Chevy Chase, Md., and William Franklin Gilmore, Oxford, Miss., assignors to the United States of America as represented by the Secretary of the Army

No Drawing. Continuation-in-part of abandoned application Ser. No. 506,291, Nov. 3, 1965. This application June 17, 1968, Ser. No. 737,358
Int. Cl. C07c 141/00
U.S. Cl. 260—453 2 Claims

N-subsituted 2-aminoethanethiosulfuric acids of the formula:

$$R—NH—CH_2—CH_2—SSO_3H$$

wherein R represents alkyl or phenyl alkyl, are effective antiradiation drugs for animals. The compounds are useful in prevention of cellular damage from radiation. The methods of preparation include the reaction of a primary bromo hydrocarbon with 2-aminoethanethiosulfuric acid, reacting a 2 (sec-alkyl amino) ethyl bromide hydrobromide with sodium thiosulfate pentahydrate, and reacting ammonium thiosulfate with a 1-substituted aziridine.

3,595,900

CYANATOPHENYL-TERMINATED POLYARYLENE ETHERS

Basil L. Loudas, St. Paul, and Herward A. Vogel, Oakdale, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

No Drawing. Filed July 1, 1968, Ser. No. 741,303
Int. Cl. C07c 135/00; C07d 55/08
U.S. Cl. 260—453 8 Claims

Hydroxy-terminated polyarylene ethers are reacted with cyanogen halides to produce cyanatophenyl-terminated polyarylene ethers which can be thermally polymerized to produce polyarylene ether cyanurates having outstanding strength, toughness, and flexibility and useful in adhesives, coatings, and binders.

3,595,901

SELECTIVE 1:1 ADDITION OF ETHYLENE AND ACRYLONITRILE IN PRESENCE OF PALLADIUM METAL SALTS

Claibourne D. Smith, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Feb. 19, 1969, Ser. No. 800,759
Int. Cl. C07c 121/30
U.S. Cl. 260—465.9 4 Claims

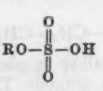
Isomeric pentenenitriles are prepared by the selective 1:1 addition of ethylene and acrylonitrile in the presence of palladium metal salts.

3,595,902
HYDROXYCYCLOALKANONES
Paul Bellet, Paris, and Truong Van Thuong, Clichy-sous-Bois, France, assignors to Roussel-UCLAF, Paris, France
No Drawing. Original application Apr. 19, 1966, Ser. No. 543,531, now Patent No. 3,432,393, dated Mar. 11, 1969. Divided and this application Oct. 7, 1968, Ser. No. 786,519
Claims priority, application France, Apr. 28, 1965, 15,005
Int. Cl. C07c *61/36, 69/74*
U.S. Cl. 260—468R 1 Claim

Optically active 1-hydroxycycloalkane-3-ones selected from the group consisting of levorotatory 1-β-hydroxy-2β-methyl - 2α - (3' - oxo - 6' - carbomethoxy - hexyl) - cyclopentane-3-one, dextrorotatory 1-β-hydroxy-2α-methyl-2β-(3' - oxo - 6' - carbomethoxyhexyl) - cyclopentane - 3-one and levorotatory 3-methoxy-8,14-seco-$\Delta^{1,3,5(10),9(11)}$-estratetraene-17-ol-14-one of the natural series. The compounds are optically active intermediates in the total synthesis of steroids.

3,595,903
PROCESS FOR PREPARING ALIPHATIC MONOMERCAPTANS
Carl C. Greco, Bronx, N.Y., assignor to Stauffer Chemical Company, New York, N.Y.
No Drawing. Filed Sept. 20, 1967, Ser. No. 669,261
Int. Cl. C07c *149/06, 149/20*
U.S. Cl. 260—481 10 Claims

A process for preparing aliphatic monomercaptans which comprises, first neutralizing an organo sulfate of the formula:



wherein R is an aliphatic radical free of reactive substituents of from 1 to 18 carbon atoms, with a metal hydroxide. The resultant organo sulfate is then reacted with a metal trithiocarbonate and the resultant metal organic trithiocarbonate acidified with an aqueous acid to produce the desired aliphatic monomercaptan.

3,595,904
MONOALKYL FUMARATES OF TETRACYCLINE COMPOUNDS
Albert E. Timreck, Rego Park, N.Y., and Helmut W. Raaf, Karlsruhe-Waldstadt, Germany, assignors to Pfizer Inc., New York, N.Y.
No Drawing. Filed May 18, 1967, Ser. No. 639,281
Int. Cl. A61k *21/00;* C07c *103/19*
U.S. Cl. 260—485 9 Claims

Monoalkyl fumarate compounds of medicaments containing basic or quaternary nitrogen atoms are quite insoluble and are useful in sustained release and tasteless dosage forms such as chewable tablets, suspensions, suppositories and depot injectables. Insolubility prevents unpleasant taste from becoming apparent while the tablet is ingested and enhances sustained release characteristics. Suitable medicaments include antibiotics, vitamins and central nervous system regulators.

3,595,905
PREPARATION OF UNSATURATED ESTERS
Robert G. Schultz, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.
No Drawing. Filed Apr. 18, 1966, Ser. No. 545,521
Int. Cl. C07c *67/04*
U.S. Cl. 260—497A 7 Claims

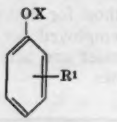
The present invention relates to the preparation of unsaturated esters from olefines utilizing a palladium catalyst which includes various palladium compounds, which may also be used in combination with metal salts. Unsaturated esters having a high degree of terminal substitution relative to internal substitution are obtained.

3,595,906
METHOD FOR PREPARING LIGHT-COLORED OLEFIN SULFONATES
Masuzo Nagayama and Hiroshi Okada, Tokyo, Japan, assignors to Lion Fat & Oil Co., Ltd., Tokyo, Japan
No Drawing. Filed May 2, 1969, Ser. No. 821,478
Claims priority, application Japan, May 16, 1968, 43/33,006
Int. Cl. C07c *143/16*
U.S. Cl. 260—513 4 Claims

A method for preparing α-olefin sulfonates comprising mixing α-olefin feed with a certain type of Friedel-Crafts catalyst to react α-olefin component or impurities in the feed therewith, separating said component from the impurities, sulfonating the purified α-olefin component as a thin film, neutralizing the sulfonated α-olefin, and hydrolysing the neutralized products.

3,595,907
CARBOXYLATION OF INDENE
Edwin L. Patmore, Fishkill, and William R. Siegart and Harry Chafetz, Poughkeepsie, N.Y., assignors to Texaco Inc., New York, N.Y.
No Drawing. Filed Dec. 18, 1968, Ser. No. 784,901
Int. Cl. C07c *51/14*
U.S. Cl. 260—515 4 Claims

Method of carboxylating a compound of the group of R-C≡CH, RCH_2CN, indene, cyclopentadiene or fluorene, where R is hydrocarbyl, comprising contacting said compound with carbon dioxide under substantially anhydrous conditions in the presence of a base of the formula:



where X is sodium or potassium, R^1 is hydrogen or alkyl and subsequently acidifying the resultant reaction product to form the carboxylated product.

3,595,908
TWO-STEP OXIDATION OF PARAXYLENE FOR THE PRODUCTION OF TEREPHTHALIC ACID
Daniel Lumbroso, Le Vesinet, Yvelines, France, assignor to Institut Francais du Petrole des Carburants et Lubrifiants, Rueil-Malmaison, France
No Drawing. Filed Nov. 1, 1966, Ser. No. 591,143
Int. Cl. C07c *63/02*
U.S. Cl. 260—524R 8 Claims

For the production of terephthalic acid by the oxidation of paraxylene, an improvement is obtained by conducting a two-step continuous process, as follows:

(1) passing molecular oxygen into a reaction zone maintained at 80–125° C., said reaction zone containing a mixture of paraxylene and paratoluic acid in a proportion of 0.5–4% by weight paraxylene and 96–99.5% by weight paratoluic acid, the former and the latter being dissolved in an aliphatic carboxylic acid containing an oxidation catalyst, paraxylene being fed continuously to the reaction zone to maintain the above ratio of paraxylene to paratoluic acid and

(2) withdrawing resultant reaction mixture continuously from the first reaction zone, and passing same to a second reaction zone separate and distinct from said first reaction zone, and subjecting said reaction mixture to additional oxidation with molecular

oxygen at 130–170° C., recovering terephthalic acid and paratoluic acid from said second reaction zone, and recycling at least a part of said recovered paratoluic acid to said first reaction zone.

3,595,909

PROCESS FOR MAKING ACID METAL SALTS FROM ORGANIC HYDROXYL COMPOUNDS

Robert C. Sheldon, Marshfield, Mass., assignor to Middleboro Chemical Industries, Inc., Middleboro, Mass.

Filed Nov. 1, 1967, Ser. No. 679,745
Int. Cl. C07c *51/30*
U.S. Cl. 260—528 1 Claim

A process for making acid metal salts from organic hydroxyl compounds comprising mixing water and a catalyst comprising palladium on inert support material in a reactor, agitating the mixture to produce a uniform catalyst suspension, admixing with the catalyst suspension the hydroxyl compound to be converted, injecting oxygen into the mixture, and admitting a metal hydroxide to the reactor, to convert substantially all of the hydroxyl compound to its corresponding organic acid metal salt.

3,595,910

PRODUCTION OF UNSATURATED ALIPHATIC CARBOXYLIC ACIDS

William John Ball, Capel, near Dorking, England, assignor to BP Chemicals (U.K.) Limited, London, England

No Drawing. Filed Apr. 21, 1967, Ser. No. 632,549
Claims priority, application Great Britain, May 4, 1966, 19,612/66
Int. Cl. C07c *57/04*
U.S. Cl. 260—530 11 Claims

Vapour phase catalytic oxidation of (meth) acrolein using an oxide composition containing antimony, molybdenum and cobalt as catalyst.

3,595,911

PRODUCTION OF UNSATURATED CARBOXYLIC ACIDS

William John Ball, Capel, near Dorking, England, assignor to The Distillers Company Limited, Edinburgh, Scotland

No Drawing. Filed Feb. 2, 1967, Ser. No. 613,410
Claims priority, application Great Britain, Feb. 26, 1966, 8,571/66
Int. Cl. C07c *57/04*
U.S. Cl. 260—533N 12 Claims

The application relates to the production of acrylic or methacrylic acid by the vapour phase catalytic oxidation of the corresponding unsaturated aldehydes or olefines wherein the oxidation catalyst is an oxide composition containing antimony and molybdenum together with one or more specified polyvalent metals.

3,595,912

PROCESS FOR REMOVING ALLOTHREONINE

Yasuo Ariyoshi, Kanagawa-ken, and Naotake Sato, Tokyo, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Filed Aug. 29, 1969, Ser. No. 854,169
Claims priority, application Japan, Sept. 4, 1968, 43/63,560
Int. Cl. C07c *101/30, 143/30, 143/56*
U.S. Cl. 260—534M 3 Claims

Threonine can be purified of accompanying allothreonine by precipitation of allothreonine from a common aqueous solution as an insoluble addition compound with 5-nitronaphthalene-1-sulfonic acid, 6- or 8-chloronaphthalene-2-sulfonic acid, anthraquinone-β-sulfonic acid, H-acid, o-sulfobenzoic acid, tetrachlorophthalic acid, 3,6-dichlorophthalic acid, tetrabromophthalic acid, α-naphthylphosphoric acid, or chlorendic acid. Little, if any, threonine is precipitated.

3,595,913

CRYSTALLIZATION OF ACETYLSULFANILYL CHLORIDE

Lawrence James Ross, North Plainfield, and Albert Joseph Costello, Oakland, N.J., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed May 12, 1969, Ser. No. 823,947
Int. Cl. C07c *143/70*
U.S. Cl. 260—543R 7 Claims

Pure N-acylsulfanilyl chlorides are obtained from the reaction of an acylanilide and chlorosulfonic acid by adding an organic solvent and a cationic or nonionic surfactant to the reaction mixture after reaction is complete but prior to crystallizing the product. The product is precipitated by adding water to the reaction mixture to reduce the sulfuric acid strength thereof to below about 50%.

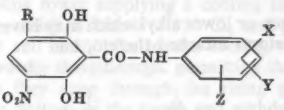
3,595,914

3-NITRO-γ-RESORCYLIC ACID ANILIDES

Heinrich Ruschig, Bad Soden, Taunus, Dieter Duwel, Hofheim, Taunus, and Johann Konig, Niederhofheim, Taunus, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed Jan. 10, 1969, Ser. No. 790,437
Claims priority, application Germany, Jan. 18, 1968, P 16 68 080.1
Int. Cl. C07c *103/30*
U.S. Cl. 260—559 12 Claims

Anthelmintically-active anilides of the formula



wherein R is H, Cl, Br, or I; X is halogen, NO_2, or CF_3; Y is H, CH_3, CF_3, OCH_3, or halogen; and Z is H, or, if Y is OCH_3 or halogen, then Z is H, OCH_3, or halogen.

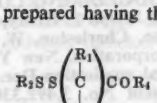
3,595,915

POLYCHLOROETHYLTHIO AND POLYCHLOROVINYLTHIO CARBOXYLIC ACID AMIDES

Carl D. Emerson, Kansas City, Mo., and Paul C. Aichenegg, Prairie Village, Kans., assignors to Chemagro Corporation, New York, N.Y.

No Drawing. Application Oct. 2, 1964, Ser. No. 401,253, now Patent No. 3,442,941, dated May 6, 1969, which is a continuation of application Ser. No. 841,162, Feb. 5, 1969. Divided and this application Apr. 7, 1970, Ser. No. 24,418
Int. Cl. C07c *103/30*
U.S. Cl. 260—561 7 Claims

Compounds are prepared having the formula:



where:

R_1 and R_3 are selected from the group consisting of hydrogen, lower alkyl, carboxyl lower alkyl, carbocyclic aryl, carbocyclic haloaryl, haloalkyl, and ester of carboxy lower alkyl;

R_2 is selected from the group consisting of polyhaloethyl and polyhalovinyl;

R_4 is selected from the group consisting of OH, SH, OR_5 where R_5 is selected from the group consisting of alkyl-

carbocyclic aryl, halocarbocyclic aryl, haloalkyl and alkylthioalkyl, SR_8,

where:

R_6 and R_7 are selected from the group consisting of hydrogen, alkyl and carbocyclic aryl or R_6 and R_7 together with N complete a heterocyclic ring, and OMe where Me is selected from the group consisting of the metals of Groups I, II, VI, VII and VIII of the Periodic Table; and x is an integer from 1 to 2 inclusive. Such materials have been found useful to kill nematodes, fungi and undesirable plants. They also are useful as defoliating agents.

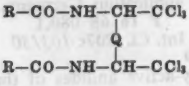
3,595,916

NOVEL DIAMINO COMPOUNDS

Walter Ost, Klaus Thomas, and Dietrich Jerchel, Ingelheim am Rhein, and Karl-Richard Appel, Biberach an der Riss, Germany, assignors to C. H. Boehringer Sohn, Ingelheim am Rhein, Germany

No Drawing. Filed Jan. 22, 1969, Ser. No. 793,187
Claims priority, application Austria, Jan. 23, 1968, A 674/68; May 17, 1968, A 4,795/68
Int. Cl. A01n *5/00*
U.S. Cl. 260—561 **6 Claims**

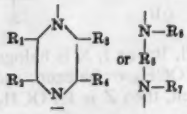
The compounds are biocidal diamino compounds of the formula



wherein

R is hydrogen or lower alkyl which may have one or more halogen atoms attached thereto, and

Q is



where

R_1 is hydrogen, lower alkyl or phenyl,

R_2, R_3 and R_4 are each hydrogen or lower alkyl,

R_5 is alkylene of 1 to 10 carbon atoms, and

R_6 and R_7 are each hydrogen, alkyl of 1 to 16 carbon atoms, allyl, β-cyanoethyl, phenyl or benzyl, which may have one or two halogen substituents attached thereto.

3,595,917

DIAMINE BRIDGED-RING COMPOUNDS

David J. Trecker and Joseph P. Henry, South Charleston, and John W. Lynn, Charleston, W. Va., assignors to Union Carbide Corporation, New York, N.Y.

No Drawing. Original application Dec. 9, 1965, Ser. No. 520,298, now Patent No. 3,492,330, dated Jan. 27, 1970. Divided and this application July 30, 1969, Ser. No. 846,256
Int. Cl. C07c *87/40, 149/26;* **C08g** *22/24*
U.S. Cl. 260—563 **2 Claims**

A class of 2,5- and 2,6-diamine norbornanes, e.g. 5(6)-aminoethyl-2-(2-aminoethyl)norbornane, is produced by the free radical addition of a functionally substitute alkane to the unsaturated carbon atoms of a bridged-ring olefin. The functionally substituted alkane is free of non-benzenoid carbon-to-carbon unsaturation and contains at least one hydrogen atom bonded to a carbon atom which, in turn, is (i) a carbon atom of a functional substituent or (ii) a carbon atom in a position alpha to the functional substituent. The norbornanes produced have the radical of the functionally substituted alkane bonded to the bridged-ring olefin moiety by a carbon-to-carbon bond. The products are useful in the manufacture of polymers.

3,595,918

STABILIZATION OF TOLYLENE DIAMINE

George A. Salensky, Metuchen, N.J., assignor to Union Carbide Corporation, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 698,140, Jan. 16, 1968. This application Dec. 27, 1968, Ser. No. 787,554
Int. Cl. C07c *85/16, 87/58*
U.S. Cl. 260—578 **7 Claims**

Tolylenediamine stabilized with ascorbic acid to prevent discoloration and staining.

3,595,919

PROCESS OF MANUFACTURING N,N'-POLYTHIO-BIS-DIALKYLAMINE

Kyung S. Shim, Dobbs Ferry, N.Y., assignor to Stauffer Chemical Company, New York, N.Y.

No Drawing. Filed July 23, 1968, Ser. No. 746,745
Int. Cl. C07c *85/00, 85/04*
U.S. Cl. 260—583 **5 Claims**

A two step process for manufacturing N,N'-polythio-bis-dialkylamine which consists of intermixing a dialkylamine with a water immiscible organic solvent and thereafter adding simultaneously an aqueous inorganic base and a sulfur chloride composition to form an intermediate product. The intermediate product is separated from an aqueous layer that is formed. Thereafter, elemental sulfur is added to the organic layer and reacted therewith to form an end product consisting of N,N'-polythio-bis-dialkylamine wherein said sulfur rank ranges between 5 and 8.

3,595,920

PROCESS FOR CONVERTING AN OLEFIN TO A PRODUCT CONTAINING HIGHER AND LOWER OLEFINS

Alan F. Ellis, Murrysville, and Edward T. Sabourin, Allison Park, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

No Drawing. Filed May 5, 1969, Ser. No. 821,945
Int. Cl. C07c *3/62*
U.S. Cl. 260—683D **10 Claims**

A process for converting, by metathesis, an olefin, particularly an alpha olefin, to a product containing a mixture of olefins of higher and lower carbon number than the olefin charge, which involves contacting the olefin charge with a novel composition containing alumina, molybdenum or rhenium and silver or copper.

3,595,921

REDUCING THE COLOR CONTENT OF POLYETHYLENE POLYAMINES PREPARED BY THE REACTION OF AMMONIA WITH ETHYLENE DICHLORIDE

James William Pitts, Port Neches, Tex., assignor to Jefferson Chemical Company, Inc., Houston, Tex.

No Drawing. Filed June 16, 1969, Ser. No. 833,802
Int. Cl. C07c *85/16*
U.S. Cl. 260—583 **6 Claims**

The color content of the polyethylene polyamine products prepared by the reaction of ethylene dichloride with ammonia is reduced by refluxing the product in the presence of at least about 0.5 wt. percent potassium hydroxide for at least one hour at a temperature of about 110° to

about 190° C. at the reduced pressure corresponding to the refluxing temperature and recovering the polyethylene polyamine product having a substantially reduced color content from the refluxing mixture.

3,595,922
BENZIL PREPARATION

Philip Manos, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation-in-part of application Ser. No. 551,872, May 23, 1966. This application Mar. 25, 1969, Ser. No. 810,376
Int. Cl. C07c *49/76*
U.S. Cl. 260—590 3 Claims

Process for preparing benzils from benzoins by reaction with cupric carboxylate catalyst at 20–130° C. and oxygen.

3,595,923
CONDENSATION PRODUCT OF 2-ETHYLHEXANOL A POLYETHYLENE GLYCOL MONO-N-BUTYL ETHER AND THIODIGLYCOL

Hans-George Schmelzer, Cologne-Stammheim, Willi Wolff, Cologne-Muelheim, and Hans Holtschmidt, Horst Kopnick, and Eberhart Degener, Leverkusen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed June 17, 1968, Ser. No. 737,280
Claims priority, application Germany, June 30, 1967, F 52,829
Int. Cl. C07c *149/14*; C08d *11/02*; C08f *45/46*
U.S. Cl. 260—609 4 Claims

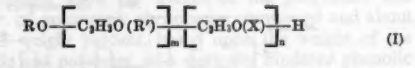
Plasticizer for elastomers comprising the condensation product of 2-ethylhexanol, a polyethylene glycol mono-n-butyl ether with an average molecular weight of from 200–400 and thiodiglycol in a molar ratio of 0.8–2:0.05–0.2:1 respectively.

3,595,924
CHEMICAL COMPOUNDS HAVING EMULSIFYING PROPERTIES

Gregoire Kalopissis, Paris, and Guy Vanlerberghe, Mitry-Mory, France, assignors to L'Oreal, Paris, France

No Drawing. Filed Oct. 23, 1967, Ser. No. 677,047
Claims priority, application Luxembourg, Oct. 21, 1966, 52,227; Oct. 24, 1966, 52,228; Oct. 6, 1967, 54,622
Int. Cl. C07c *43/04*
U.S. Cl. 260—615 3 Claims

This invention relates to new emulsifiers responding to the formula:

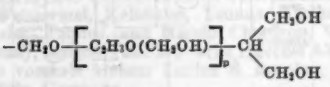


(I)

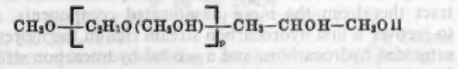
In this formula R indicates a saturated aliphatic radical comprising 12 to 20, and preferably 16 to 18 carbon atoms; R' indicates a methyl or ethyl radical; X indicates either:

a hydroxymethyl radical

a radical responding to the formula:



or a radical responding to the formula:



m is a number between 1 and 10, preferably between 2 and 6, inclusive; *n* is a number equal to or greater than one, but no greater than 5; and *p* is a number between 0 and 10 inclusive, the product $n(p+2)$ being between 2 and 12 inclusive. The invention also includes cosmetic compositions comprising such emulsifiers.

3,595,925
FLUORINATION OF ω-HYDRO-FLUORINATED POLYETHERS

Bruce H. Garth, Newark, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Jan. 30, 1969, Ser. No. 795,342
Int. Cl. C07c *41/00*
U.S. Cl. 260—615 8 Claims

Process for the liquid phase fluorination of hydro-end-capped polyfluorinated polyethers which comprises reacting the polyethers with antimony pentafluoride.

3,595,926
PRODUCTION OF FREE FLOWING PARAFORMALDEHYDE

Hans-Joachim Mann, Mainz (Rhine), Walter Pohl, Gotzenhain uber-Langen, Klaus Simon, Buschschlag uber-Sprendlingen, and Wolfgang Weigert, Offenbach am Main, Germany, assignors to Deutsche Gold-und Silber Scheideanstalt vormals Roessler, Frankfurt am Main, Germany

Continuation of application Ser. No. 673,198, Oct. 5, 1967, which is a continuation-in-part of application Ser. No. 632,905, Apr. 24, 1967. This application Oct. 24, 1969, Ser. No. 869,393
Claims priority, application Germany, May 9, 1967, D 53,028
Int. Cl. C07c *47/10*
U.S. Cl. 260—615.5 7 Claims

Process for the production of a free flowing paraformaldehyde product which comprises spraying a liquid formaldehyde concentrate containing 85 to 90% by weight of formaldehyde in the form of droplets into the upper portion of a cooling tower supplying a cooling inert gas at a temperature which is below +39° C., and preferably between −40 and +30° C., to the cooling tower and passing it upwardly therethrough, permitting the droplets to solidify as they drop through the rising gas before they reach the bottom of the tower and withdrawing the solidified particles from the bottom of the tower. Preferably a fluidized bed of solidified paraformaldehyde particles is maintained in the bottom portion of the tower and the solidified particles are further cooled after removal from the tower.

3,595,927
ARALKYL SUBSTITUTED PYROCATECHOLS

Eugene R. Wagner, Zionsville, Ind., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Oct. 11, 1968, Ser. No. 766,977
Int. Cl. C07c *39/16*
U.S. Cl. 260—619 1 Claim

Aralkyl substituted pyrocatechol compounds such as 6 - tert - butyl - 3 - (3,5-di-tert-butyl-4-hydroxybenzyl)-4-methylpyrocatechol are prepared from 3-tert-butyl-5-methylpyrocatechol. The compounds are useful in the study of animal sterol metabolism and are particularly useful as agents for reducing cholesterol levels.

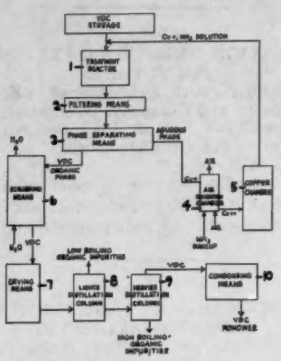
3,595,928
PROCESS FOR PURIFYING VINYLIDENE CHLORIDE

Walker H. Rideout and William L. Reilly, Corpus Christi, Tex., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation of application Ser. No. 477,755, Aug. 6, 1965. This application May 19, 1969, Ser. No. 830,192
Int. Cl. C07c *21/00*
U.S. Cl. 260—654S 22 Claims

Vinylidene chloride monomers are stabilized to prevent the formation of undesirable color bodies by con-

tacting the monomer with at least 2 percent by volume, basis the volume of the monomer, of an aqueous solution containing ions of either silver, copper or mercury;



and, desirably, a coordinating ligand which is non-reactive with the monomer and which may be readily phase-separated from the monomer.

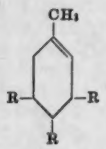
3,595,929

PROCESS FOR PREPARING METHYLCYCLOHEXENES

André Lakodey and Francis Weiss, Pierre-Benite, France, assignors to Ugine Kuhlmann

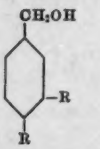
No Drawing. Filed Dec. 9, 1969, Ser. No. 883,581
Claims priority, application France, Dec. 10, 1968, 177,358
Int. Cl. C07c *1/24*
U.S. Cl. 260—666 3 Claims

Methylcyclohexenes of the following formula:



(I)

in which R represents a methyl radical or a hydrogen atom and in which at least one R substituent is a hydrogen atom and those two R representing methyl radical are adjacent, are prepared by dehydrating a hexahydrobenzylic alcohol having the following Formula II



(II)

in which R has the meaning given above, in the vapor phase.

3,595,930

ANIONIC ADDITION OF DIARYLMETHANES TO HYDROCARBONS

John E. Hofmann and Alan Schriesheim, Berkeley Heights, N.J., assignors to Esso Research and Engineering Company

No Drawing. Filed June 1, 1965, Ser. No. 460,508
Int. Cl. C07c *15/16, 15/20*
U.S. Cl. 260—668C 4 Claims

A method of effecting the anionic addition of weakly acidic nucleophilic molecules with hydrocarbon substrates in the presence of a basic catalyst by use of alkyl phosphoramide and tetraalkyl urea solvents.

3,595,931

HYDROGENOLYSIS OF AROMATIC HALIDES

Russell G. Hay, Gibsonia, and John G. McNulty and William L. Walsh, Glenshaw, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

No Drawing. Filed May 28, 1968, Ser. No. 732,549
Int. Cl. C07c *15/02*
U.S. Cl. 260—668 11 Claims

A process is provided for the replacement of a halogen moiety on a halogenated aromatic with a hydrogen. The process involves contacting the halogenated aromatic in the vapor phase in the presence of hydrogen with a supported catalyst containing a minor amount of Pt or Pd and a minor amount of a hydrated alkali or alkaline earth metal oxide such as KOH.

3,595,932

METHOD OF PRODUCING BENZENE AND ITS LOW-MOLECULAR WEIGHT HOMOLOGS

Gdal Nossonovich Maslyansky, Prospekt Obukhovskoi Oborony 23, kv. 18; Georgy Lazarevich Rabinovich, Ulitsa Kibalchicha 16, kv. 34; Nina Khrisanfovna Avtonomova, Zverinskaya ulitsa 7/9, kv. 48; and Kira Lvovna Brisker, Naberezhnaya Chernoi Rechki 10, kv. 30, all of Leningrad, U.S.S.R.

No Drawing. Filed Aug. 20, 1968, Ser. No. 753,886
Int. Cl. B01j *11/06;* C07c *3/00, 3/58*
U.S. Cl. 260—672 1 Claim

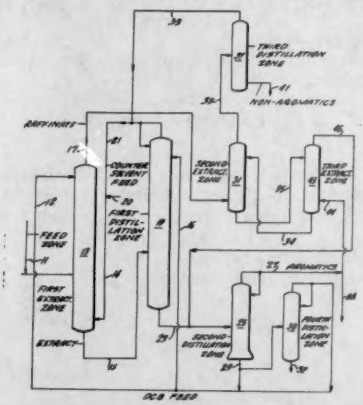
Alkyl benzenes are dealkylated with steam at a temperature of 380–600° C. in the presence of a catalyst. The catalyst is a binary system consisting of platinum, palladium, rhodium, iridium, ruthenium or mixtures thereof, deposited in an amount of 0.05 to 5% by weight on a carrier consisting of aluminum oxide, aluminosilicate, a combination of aluminum oxide with oxides of nickel or aluminum oxide with oxides of cobalt.

3,595,933

PROCESS FOR THE SEPARATION OF ORGANIC COMPOUNDS BY EXTRACTION WITH 1,3-DICYANOBUTANE

Julian Feldman, Cincinnati, Ohio, and Joel B. Pedigo, Wheaton, Ill., assignors to National Distillers and Chemical Corporation, New York, N.Y.

Filed July 18, 1968, Ser. No. 745,921
Int. Cl. C07c *7/10;* C10g *21/20, 21/28*
U.S. Cl. 260—674SE 11 Claims



A process for treating mixtures of hydrocarbons to extract therefrom the more unsaturated components, and to recover a first hydrocarbon stream rich in the more unsaturated hydrocarbons and a second hydrocarbon stream lean in the more unsaturated hydrocarbons. 1,3-dicyanobutane is employed to effect this separation utilizing one or more processing procedures such as liquid-liquid ex-

traction, extractive distillation, extractive stripping, and the like. The extraction of aromatic from non-aromatic hydrocarbons is a preferred form of separation which may be effected by this process.

3,595,934

RADIATION RESISTANT VINYL-CONTAINING SILOXANE COMPOSITIONS

Anthony J. Butler, Keith E. Polmanteer, and Forrest O. Stark, Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

No Drawing. Filed Nov. 6, 1967, Ser. No. 681,015
Int. Cl. C08g *47/00*
U.S. Cl. 260—825 2 Claims

A tacky copolymer of vinylmethylphenylsiloxy-end-blocked phenylmethylsiloxane fluids and tris(dimethylhydrogensiloxy)phenylsilane as crosslinker with a significant excess of SiH is found to yield a very stable interlayer for radiation cave windows.

3,595,935

POLYBLENDS HAVING IMPROVED PROPERTIES

Lamberto Crescentini, Chester, Va., assignor to Allied Chemical Corporation, New York, N.Y.

No Drawing. Filed Jan. 31, 1969, Ser. No. 795,691
Int. Cl. C08g *41/04*
U.S. Cl. 260—857R 9 Claims

When polyamides having a substantial proportion of primary amino end-groups and carboxyl end-groups bound to terminating agents containing tertiary or unreactive secondary amino groups are melt-blended with polyesters, filaments can be spun therefrom without adverse interaction between the polymers and with enhanced dyeability.

3,595,936

FILAMENT COMPRISING A POLYMER BLEND OF POLYESTER AND POLYAMIDE CONTAINING AN ORGANIC PHOSPHORUS COMPOUND AND A STERICALLY HINDERED PHENOLIC COMPOUND

Amnon Birenzvige and Gene C. Weedon, Richmond, Va., assignors to Allied Chemical Corporation, New York, N.Y.

No Drawing. Filed Apr. 29, 1969, Ser. No. 820,320
Int. Cl. C08g *41/04*
U.S. Cl. 260—857 16 Claims

A process for increasing the whiteness of a filament extruded from a polymer blend comprised of polyester and polyamide which comprises incorporating in the polymer blend, prior to extrusion thereof, about 0.05 to 3 weight percent, based upon the weight of the polyamide and polyester, of an organic phosphorus compound and about 0.05 to 3 weight percent, based upon the weight of the polyamide and polyester, of a sterically hindered phenolic compound and melt extruding the polymer blend to form a filament having increased whitness.

3,595,937

THERMOPLASTIC POLYESTER MOULDING COMPOSITIONS CONTAINING POLYACETALS

Klaus Weissermel, Kelkheim, Taunus, Karlheinz Burg, Hofheim, Taunus, and Harald Cherdron, Wiesbaden, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed Sept. 23, 1968, Ser. No. 761,807
Claims priority, application Germany, Oct. 11, 1967, P 16 94 204.4
Int. Cl. C08c *11/32*; C08g *39/10, 51/18*
U.S. Cl. 260—860 21 Claims

Thermoplastic moulding compositions comprising a linear saturated polyester and polyacetals, from which shaped articles can be made having a good surface hardness and a high impact strength and bending strength.

3,595,938

POLYETHYLENE GLYCOL TEREPHTHALATE/POLY - 1,4 - DIMETHYLOL-CYCLOHEXANE TEREPHTHALATE BLOCK COPOLYESTER THERMOPLASTIC MOULDING COMPOSITIONS

Klaus Weissermel, Kelkheim, Taunus, and Ludwig Brinkmann and Walter Herwig, Frankfurt am Main, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed Sept. 26, 1968, Ser. No. 762,984
Claims priority, application Germany, Oct. 7, 1967, P 17 20 722.6
Int. Cl. C08g *39/10*
U.S. Cl. 260—860 5 Claims

Thermoplastic moulding compositions comprising block copolyesters of polyethylene glycol terephthalate units and poly-1,4 - dimethylolcyclohexane terephthalate units from which mouldings having a high impact strength and bending strength can be produced.

3,595,939

PROCESS FOR THE PRODUCTION OF VINYL CHLORIDE/VINYL ALCOHOL COPOLYMERS

Marvin Koral, Warren, Elliott Farber, Trenton, and Christian W. Johnston, Belle Mead, N.J., assignors to Tenneco Chemicals, Inc.

No Drawing. Filed Dec. 27, 1968, Ser. No. 787,588
Int. Cl. C08f *27/14*
U.S. Cl. 260—871 10 Claims

Heat-stable vinyl chloride/vinyl alcohol copolymers are prepared by heating a vinyl chloride/vinyl acetate copolymer in suspension in a lower alkanol that contains a strong acid catalyst until most or all of the acetate groups have been converted to alcohol groups and treating the recovered copolymer with, for example, calcium hydroxide, to neutralize the acid that is present in it.

3,595,940

GRAFT COPOLYMERS AND PROCESS FOR THEIR MANUFACTURE

Gerhard Kuhne and Jurgen Kuhls, Burghausen, Salzach, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed Oct. 29, 1968, Ser. No. 771,605
Claims priority, application Germany, Nov. 17, 1967, P 17 20 750.0
Int. Cl. C08f *29/24, 19/08, 19/10*
U.S. Cl. 260—876 8 Claims

The present invention relates to crystal clear graft copolymers of high impact strength and their manufacture by polymerizing vinyl chloride to an extent of polymerization of 50 to 85%, then adding an elastomer latex obtained from butadiene, styrene and vinyl esters, in an amount within the range of from 1 to 30% by weight calculated on the vinyl chloride and finally continuing the polymerization of the whole mixture.

The resulting graft copolymers can be used either alone or in admixture with suspension or mass polyvinyl chloride for making crystal clear shaped articles of high notched impact tensile strength.

3,595,941

METHOD FOR CONTROLLING THE MOONEY VISCOSITY OF ALKALI METAL-TERMINATED POLYMERS

Ralph C. Farrar and Alvin C. Rothlisberger, Bartlesville, Okla., assignors to Phillips Petroleum Company

Filed Nov. 4, 1966, Ser. No. 592,000
Int. Cl. C08d *5/02*; C08f *15/04, 27/00*
U.S. Cl. 260—879 12 Claims

In the formation of random or block copolymers of a conjugated diene and styrene, a yellow color forms only

when polymerization of the conjugated diene is substantially complete. The color formation is utilized to determine the optimum time for addition of treating agents to provide coupling and/or branching, so as to substantially increase the Mooney value of the final polymer.

3,595,942

PARTIALLY HYDROGENATED BLOCK COPOLYMERS

Milton M. Wald, Walnut Creek, and Myron G. Quam, deceased, late of Hayward, Calif.; said Wald assignor to Shell Oil Company, New York, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 333,671, Dec. 26, 1963. This application Dec. 24, 1968, Ser. No. 806,763

(Filed under Rule 47(a) and 35 U.S.C. 116)

Int. Cl. C08f *15/04*

U.S. Cl. 260—880 **4 Claims**

Block copolymers of monovinyl arenes with conjugated dienes are hydrogenated to form selectively hydrogenated products wherein only the conjugated diene blocks are hydrogenated, the resulting materials having substantial advantages relative to higher melt temperatures and therefore higher service temperatures, excellent resistance to oxidation and reduced creep and set characteristics.

3,595,943

HOT MELT COATING COMPOSITIONS FOR PRINTED SHEETS AND COATED, LENTICULATED SHEETS HAVING 3–D APPEARANCE

Marion O. Brunson, Brecksville, Ohio, and Ted L. Douglas, Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 685,957, Nov. 27, 1967. This application Apr. 5, 1968, Ser. No. 719,217

Int. Cl. C08f *29/12*

U.S. Cl. 260—897B **8 Claims**

Flexible sheets (such as paper) having a three dimensional (3–D) appearance have a printed stereographic image coated with a hot melt coating composition having on its surface a lenticulated pattern, said coating composition being essentially (50–100%) composed of maleated polyethylene. About 5 to 45% of the coating composition may be a copolymer of ethylene and either an alkyl (1–8 carbons) acrylate or a vinyl alkanoate (1–8 carbons). Such coating compositions as contain 5–45% copolymer (70 to 95% ethylene-30 to 5% ethyl acrylate) have even greater adhesion to both paper and ink-printed areas, and also other desirable properties, e.g. resist blocking, stain resistant, withstand folding, resist stress cracking, abrasion resistant, possess inherent stability with little or no additives, etc.

3,595,944

OIL- AND WATER-REPELLENT FLUORINE-CONTAINING COMPOSITIONS

George Hall Manning and Samuel John Webster, Runcorn, England, assignors to Imperial Chemical Industries Limited, London, England

No Drawing. Filed Apr. 1, 1968, Ser. No. 717,908

Claims priority, application Great Britain, Aug. 24, 1967, 18,777/67

Int. Cl. C08f *29/22*

U.S. Cl. 260—900 **11 Claims**

The oleophobic and hydrophobic properties of polymers of highly fluorinated monomers the fluorinated parts of whose molecules are branched are increased by mixing the polymers with oleophobic and hydrophobic polymers of highly fluorinated monomers whose fluorinated parts have linear structures; preferred mixtures comprise 0.50% to 15% of the latter and 85% to 99.5% of the former. Improved solubility of the mixtures in halogenated solvents is given by co-polymerising the monomers with polymerisable vinyl compounds not containing fluorine, for example butyl methacrylate.

Solutions in such solvents can be applied to textiles to impart oleophobic and hydrophobic properties. Resistance to dry-cleaning and laundering of treated fabrics can be improved by introducing into the copolymerisation systems minor proportions of monomers able to introduce cross-linking sites, for example hydroxyethyl methacrylate, and subsequently curing by heating the treated fabric.

Preferred linear molecules are 1H,1H-pentadecafluorooctyl acrylate and the reaction product of poly(vinyl alcohol) and perfluorooctanoic acid; preferred branched molecules are (i) the methacrylic ester,

$$C_{10}F_{19}OC_6H_4CH_2O_2CC(CH_3)=CH_2$$

of the tetrafluoroethylene pentamer derivative of p-hydroxybenzyl alcohol, (ii) the vinyl ester

$$C_{10}F_{19}OC_6H_4CO_2CH=CH_2$$

of the tetrafluoroethylene pentamer derivative of p-hydroxybenzoic acid and (iii) the vinyl ester

$$(C_2F_5)_2(CF_3)CCH_2CO_2CH=CH_2$$

of tridecafluoro-2-methyl-2-ethyl-1H,1H-butane-1-carboxylic acid.

3,595,945

N-PHENYL-N-HYDROXY(ALKOXY) - α - (O,O-DIALKYLPHOSPHORO(di)THIOATE)-ACETAMIDES

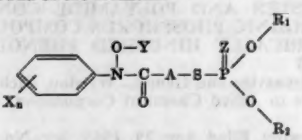
John Krenzer, Oak Park, and Sidney B. Richter, Chicago, Ill., assignors to Velsicol Chemical Corporation, Chicago, Ill.

No Drawing. Filed Dec. 28, 1967, Ser. No. 694,068

Int. Cl. C07f *9/16;* **A01n** *9/36*

U.S. Cl. 260—943 **11 Claims**

A compound of the formula:



wherein *n* is an integer of from 0 to 3; X is selected from the group consisting of a halogen, an aliphatic radical, nitro, hydroxy, alkoxy, acyl, acyloxy, and cyano; Y is selected from the group consisting of hydrogen, alkyl, acyl, alkoxycarbonyl, alkylthiocarbonyl and a carbamoyl radical; A is alkylene; Z is selected from the group consisting of oxygen and sulfur; and R_1 and R_2 are selected from the group consisting of alkyl and phenyl. The compounds are pesticides.

ERRATA

For Classes 260—47, 78, 79, 247, and 448 see:
Patent Nos. 3,595,969 thru 3,595,974

3,595,946

PROCESS FOR THE PRODUCTION OF CARBON FILAMENTS FROM COAL TAR PITCH

Louis A. Joo, Johnson City, John A. McKee, Elizabethton, and Frederick L. Shea, Johnson City, Tenn., assignors to Great Lakes Carbon Corporation, New York, N.Y.

No Drawing. Filed June 4, 1968, Ser. No. 734,257

Int. Cl. C01b *31/07*

U.S. Cl. 264—29 **5 Claims**

Carbon filaments are made from specially treated high temperature coal tar pitch. The pitch is filtered, heat

treated and its low molecular weight components are removed by distillation. The treated pitch is spun into filaments, the filaments partially oxidized and then carbonized under carefully regulated conditions to yield filamentary carbon having a tensile strength of more than 100,000 p.s.i. The filaments may be graphitized.

3,595,947

METHOD OF MANUFACTURING STRUCTURAL ELEMENTS

Pieter Simon Wielinga, Vuren an der Waal, Netherlands, assignor to Fabriek van Bouwmaterialen "Loevestein" N.V., Vuren an der Wall, Netherlands

Filed Mar. 3, 1967, Ser. No. 620,485
Claims priority, application Netherlands, Mar. 4, 1966, 6602812
Int. B29h 7/20; B44c 3/20
U.S. Cl. 264—42 9 Claims

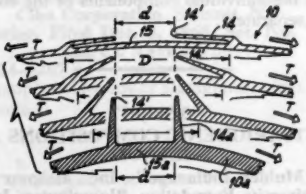
A structural element of cellular concrete having a surface layer of concrete is formed by first molding a concrete body having a cellular-forming substance, hardening the cellular body formed therefrom, applying an outer layer of concrete material of substantially the same components as the cellular concrete body but without the cellular-forming substance, and then subjecting the body to the action of steam under superatmospheric pressure, whereby to harden said layer.

3,595,948

PROCESS FOR THE INDUSTRIAL PRODUCTION OF BALLS, BALLOONS AND HOLLOW BODIES WHICH MAY BE INFLATED, FOR RECREATIVE AND SPORTING USE

Aquilino Cosani, 33010 Osoppo (Udine), Italy

Filed May 22, 1969, Ser. No. 826,845
Claims priority, application Italy, May 24, 1968, 16,863/68
Int. Cl. B29c 17/06
U.S. Cl. 264—94 6 Claims



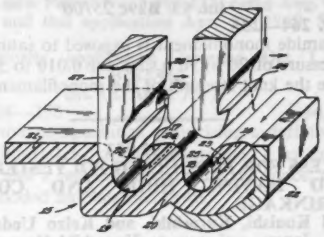
The present process relates to the formation of end hollow bodies by expansion of a hollow body to very reduced dimensions with formation of inwardly converging end pieces and leading to the formation of a converging flange or pocket, adapted to receive a flange forming the base of the handle or the member to be connected to the hollow body.

3,595,949

METHOD OF MAKING PLASTIC FASTENER PROFILE

Karel J. Staller, Rutherford, N.J., assignor to Flexigrip, Inc., Orangeburg, N.Y.

Filed Jan. 16, 1968, Ser. No. 698,245
Int. Cl. B29c 17/10
U.S. Cl. 264—146 6 Claims



A method for making an improved plastic fastener strip of a type with releasably interlocking rib and groove elements and particularly for extruding a streamlined rib element and undercutting grooves to form an overhanging tooth.

3,595,950

PRECURE COATING FOR RUBBERY POLYMERS

Stanley M. Mezynski, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed May 29, 1967, Ser. No. 642,177
Int. Cl. B29h 21/04; B44d 1/24
U.S. Cl. 264—130 10 Claims

Precure coatings for unvulcanized polymers such as those found in the sidewall areas of pneumatic tires, the coatings comprising a polymeric portion of ethylene propylene terpolymers alone or in combination with other polymeric materials to retard surface defect formation and to prevent the polymer from adhering to the mold after vulcanization.

3,595,951

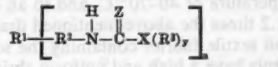
PROCESS FOR SPINNING POLY(p-BENZAMIDE)

Francis M. Logullo, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed June 27, 1969, Ser. No. 837,349
Int. Cl. D01f 1/02
U.S. Cl. 264—211 10 Claims

Poly(p-benzamide) dope containing about 1 to 10 percent based upon the weight of polymer, of a modifier of the formula

(I)



wherein

R^1 is an aliphatic or aromatic hydrocarbon radical having a valence of n,

R^2 is a single bond or a divalent aromatic hydrocarbon radical,

R^3 is a monovalent aliphatic or aromatic hydrocarbon radical,

X is a divalent oxygen (—O—) or sulfur (—S—) radical, or a trivalent nitrogen (—N<) radical,

y is 1 or 2,

n is an integer between 2 and 4, inclusive, and

Z is a divalent oxygen (=O) or sulfur (=S) radical,

is extruded to form a shaped article and the article is heated for up to 160 hours at 190 to 250 °C. This process improves the tenacity and modulus of the shaped article, as well as increasing the inherent viscosity of the polymer, without adversely affecting other desirable properties, e.g., elongation, to any appreciable extent.

3,595,952

STEAM CONDITIONING OF POLYAMIDE FILAMENT

Nolan Davidson Boyer and John Edward Hansen, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation-in-part of application Ser. No. 555,982, June 8, 1966. This application Apr. 5, 1968, Ser. No. 719,220

Int. Cl. B29c *25/00*

U.S. Cl. 264—235 14 Claims

Polyamide monofilament is exposed to saturated steam at a pressure of 20 to 90 p.s.i.g. for 0.010 to 5 seconds to improve the knot strength of the monofilament.

3,595,953

PROCESS FOR PRODUCING POLYESTER FIBERS AND HAVING HIGH AND CONSTANT SHRINKAGE

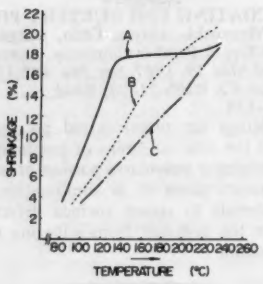
Takeshi Konishi, Kurashiki, and Keizo Ueda, Nishinomiya, Japan, assignors to Kurashiki Rayon Co., Ltd., Kurashiki, Okayama Prefecture, Japan

Filed May 14, 1969, Ser. No. 824,604

Claims priority, application Japan, May 17, 1968, 43/33,337; May 22, 1968, 43/34,537; May 25, 1968, 43/35,642

Int. Cl. D02j *1/22*

U.S. Cl. 264—290 6 Claims



Polyester fibers or filaments which exhibit a high and constant shrinkage at varying heat-treatment temperatures for development of shrinkage are obtained by drawing undrawn fibers or filaments to a least 3 times their original length at a temperature of 40 to 70° C., shrinking the drawn fibers or filaments at a temperature of 65–130° C. by 10–50% of the drawn length, and thereafter, drawing the fibers or filaments by 10–80% of the shrunken length at a temperature of 40–70° C. and to an extent not in excess of 1.2 times the above-mentioned drawn length. Spun yarns and textile fabrics containing the so obtained fibers or filaments have a high and uniform shrinkage at varying heat-treatment temperatures.

3,595,954

ANTIBIOTIC MACROMOMYCIN AND PROCESS FOR MAKING SAME

Hamao Umezawa, 23 Toyotama-kita-2, Nerima-ku; Tomio Takeuchi, 701A New Fujimansion Higashi Gotanda, Shinagawa-ku; Masa Hamada, 1–7–3–4 Fujicho, Hoyashi; Masaaki Ishizuka, 2–3–4 Denenchofu, Ota-ku; Hideo Chimura, 3–17–1–402 Shimo Kita-ku; and Kenji Maeda, 2–3–15 Higashi Gotanda, Shinagawa-ku, all of Tokyo, Japan

Filed Apr. 22, 1968, Ser. No. 723,214

Claims priority, application Japan, May 17, 1967, 42/30,923

Int. Cl. A61k *21/00*

U.S. Cl. 424—117 4 Claims

Macromomycin inhibits the growth of various microorganisms e.g., *Staphylococcus aureus* and inhibits the growth of Sarcoma 180 tumor in mice. The antibiotic macromomycin is produced by fermentation of a new species of Streptomyces which has been designated *Streptomyces macromomyceticus.*

3,595,955

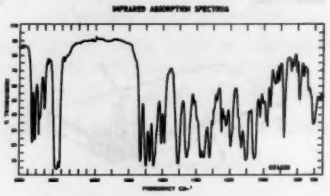
GELDANAMYCIN AND PROCESS FOR PRODUCING SAME

Clarence De Boer and Durey H. Peterson, Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed Mar. 26, 1969, Ser. No. 810,707

Int. Cl. A61k *21/00*

U.S. Cl. 424—121 7 Claims



Antibiotic geldanamycin is producible by culturing *Streptomyces hygroscopicus* var. *geldanus* var. nova. in an aqueous nutrient medium. Geldanamycin is active against the nematode *Syphacia obvelata* and can be used to inhibit this nematode in mice and monkeys.

3,595,956

COMPOSITIONS CONTAINING 2,4,5-TRICHLOROPHENOL AND POLYMYXIN B AND NEOMYCIN

Herbert J. Florestano, Indianapolis, Ind., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Continuation-in-part of applications Ser. No. 604,608 and Ser. No. 604,631, both Dec. 27, 1966. This application June 6, 1968, Ser. No. 734,850

Int. Cl. A61k *27/00*

U.S. Cl. 424—177 8 Claims

Antimicrobial compositions comprising mixtures of 2, 4,5-trichlorophenol and neomycin or polymyxin B as the essential active ingredients thereof are disclosed. Such compositions comprising 2,4,5-trichlorophenol and polymyxin B or neomycin possess greater antimicrobial activity than the individual components of the compositions employed separately.

3,595,957

ANTICARIOGENIC COMPOSITIONS AND METHODS

Joseph C. Muhler, Indianapolis, Ind., assignor to Indiana University Foundation, Bloomington, Ind.

No Drawing. Continuation of application Ser. No. 621,155, Mar. 7, 1967. This application Apr. 28, 1970, Ser. No. 29,774

Int. Cl. A61k *7/16, 27/00*

U.S. Cl. 424—199 8 Claims

By reacting urea and phosphorus pentoxide in an aqueous environment a new class of compounds may be obtained. These compounds exhibit a high degree of anticariogenic effectiveness, especially in the presence of sugar

or when employed in comestibles or sugar-containing comestibles. Among these new compounds are dimerized urea carbamido' pyrophosphate, tetraurea pyrophosphate, and urea pyrophosphate.

3,595,958

STABLE NALED DUSTS

Theodore H. Koundakjian, Berkeley, and John R. Mattox, Sausalito, Calif., assignors to Chevron Research Company, San Francisco, Calif.

No Drawing. Filed Oct. 12, 1966, Ser. No. 586,049
Int. Cl. A01n *9/36*
U.S. Cl. 424—225 5 Claims

Free-flowing pesticidal dust comprising naled, a calcined, anhydrous alkaline earth metal sulfate as a carrier and a micro silica as a flow agent.

3,595,959

METHOD OF COMBATTING FUNGI AND BACTERIA USING 2,3-DIHYDRO-1,3-BENZOXAZINE-4H-2-THIONE - 4 - ONE AND DERIVATIVES OF DIHYDRO-1,3-BENZOXAZINE-2-THIONE-4-ONE

Teruhisa Noguchi, Fujisawa-shi, Keisuke Komoto, Hiratsuka-shi, Sho Hashimoto, Kahoku-gun, Koshin Miyazaki, Takaoka-shi, and Koishi Hashimoto, Kahoku-gun, Japan, assignors to Nippon Soda Kabushiki Kaisha, Tokyo-to, Japan

No Drawing. Original application Apr. 10, 1967, Ser. No. 629,415. Divided and this application Nov. 20, 1968, Ser. No. 798,526
Claims priority, application Japan, Apr. 14, 1966, 41/23,249; Apr. 30, 1966, 41/27,244
Int. Cl. A01n *9/00, 9/22*
U.S. Cl. 424—248 5 Claims

Dihydro-1,3-benzoxazine-2-thione-4 one or derivatives thereof which have one to three substituents on the benzene ring, have fungicidal and bactericidal activities against microbes which cause plant diseases such as melanose and scab of citrus plants, anthracnose of cucumber plants and leaf mold of tomato plants. The compounds having substituent or substituents are novel compounds. This invention relates to derivatives of dihydro-1,3-benzoxazine-2-thione-4 one or derivatives thereof having certain substituents and to a novel agricultural and horticultural fungicidal and bactericidal use of these compounds and of a known analogous compound not having any substituent.

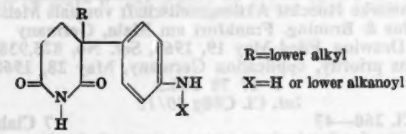
3,595,960

TREATMENT OF HYPERTENSION WITH α-(SUBSTITUTED - 4 - AMINOPHENYL) - α - LOWER ALKYLGLUTARIMIDE

Robert Gaunt, Chatham, N.J., assignor to Ciba Corporation, Summit, N.J.

No Drawing. Filed Dec. 3, 1968, Ser. No. 780,889
Int. Cl. A61k *27/00*
U.S. Cl. 424—267 5 Claims

α-(4-aminophenyl)-α-lower alkylglutarimides, e.g. those of the formula



and salts thereof decrease blood pressure in hypertensives with reduced renin blood levels and normal or reduced mineralocorticoid secretion rate.

3,595,961

HYPOTENSIVE COMPOSITIONS CONTAINING 2-(2' - HALO-ANILINO) - 1,3 - DIAZACYCLOPENTENES-(2) AND METHODS OF USING THE SAME

Helmut Stähle, Herbert Köppe, Karl Zeile, and Martin Wolf, Ingelheim am Rhein, and Wolfgang Hoefke, Budenheim (Rhine), Germany, assignors to Boehringer Ingelheim G.m.b.H., Ingelheim am Rhein, Germany

No Drawing. Original application Sept. 30, 1966, Ser. No. 583,421, now Patent No. 3,462,433, dated Aug. 9, 1969. Divided and this application Apr. 17, 1969, Ser. No. 817,200
Claims priority, application Germany, Oct. 1, 1965, B 83,965
Int. Cl. A61k *15/12*
U.S. Cl. 424—273 14 Claims

Hypotensive compositions comprising a deriative of 2-(2'-halo-anilino)-1,3-diazacyclopentene-(2) as an active ingredient, and a method of reducing the blood pressure in warm-blooded animals therewith.

3,595,962

METHOD OF USING 4-ARYLBICYCLO[2.2.2]OCTYL URETHANS AS ANTIDEPRESSANTS AND COMPOSITIONS THEREOF

Paul E. Aldrich, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation-in-part of application Ser. No. 697,302, Jan. 12, 1968. This application Feb. 6, 1970, Ser. No. 9,395
Int. Cl. A61k *27/00*
U.S. Cl. 424—274 6 Claims

This invention teaches the preparation of 4-arylbicyclo [2.2.2]oct-1-yl urethans and methods of using and formulating the same as antidepressant agents.

Representative of the compounds within the scope of this invention are ethyl N-4-phenylbicyclo[2.2.2]oct-2-en-1-yl urethan and propyl N - 4 - (o-tolyl)bicyclo[2.2.2] octane-1-yl urethan.

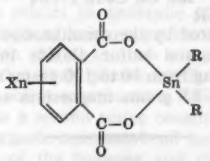
3,595,963

METHOD OF CONTROLLING THE GROWTH OF FUNGI

Pasquale P. Minieri, Woodside, N.Y., assignor to Tenneco Chemicals, Inc.

No Drawing. Continuation-in-part of application Ser. No. 620,293, Mar. 3, 1967. This application Apr. 3, 1969, Ser. No. 813,342
Int. Cl. A01n *9/00*
U.S. Cl. 424—288 6 Claims

Organotin compounds, which have the structure



wherein each R represents phenyl or an alkyl group having from 4 to 8 carbon atoms; X represents alkyl groups having from 1 to 4 carbon atoms, halogen, phenyl, carboxy, or nitro; and *n* represents an integer in the range of 1 to 4, effectively control the growth of fungi, and particularly plant pathogens, without causing appreciable injury to the host plant. Among the most effective of these fungicides is dibutyl tin 3,4-dimethyl-6-isobutylphthalate.

3,595,964

METHODS OF TREATING CESTODES WITH DIBUTYL LEAD ESTERS

Georges Gras, Montpellier, France, assignor to International Lead Zinc Research Organization, Inc., New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 624,144, Mar. 20, 1967. This application June 5, 1968, Ser. No. 734,517

Claims priority, application Netherlands, Mar. 24, 1966, 6603908

Int. Cl. A61k *27/00*

U.S. Cl. 424—293 4 Claims

The disclosure of the present application relates to a composition useful as an antihelminticum particularly as an agent useful in combating tape-worms for warm blooded animals, wherein an effective quantity of the dibutyl-lead di-ester of a fatty acid is the active ingredient.

ERRATUM

For Class 424—263 see:
Patent No. 3,595,975

3,595,965

PURIFICATION OF PETROLEUM COKE

William F. Franz, Gardiner, and Howard V. Hess, Glenham, N.Y., assignors to Texaco Inc., New York, N.Y.

Filed June 27, 1969, Ser. No. 837,255

Int. Cl. C01b *31/02*

U.S. Cl. 23—209.9 6 Claims

Purification of petroleum coke high in sulfur and containing metallic impurities by passing an excess of synthesis gas in contact with the preoxidized coke at a temperature and pressure at which the carbon monoxide of the synthesis gas is caused to combine with the metals, under the catalytic effect of the sulfur in the coke, to form gasiform metal carbonyls which are readily separated. The resulting synthesis gas is then used to hydrodesulfurize the coke under appropriate conditions.

3,595,966

PROCESS FOR THE PRODUCTION OF SULFUR

Pierre A. Mathieu, Arthez-de-Bearn, France, assignor to Societe Nationale des Petroles d'Aquitaine, Paris, France

No Drawing. Continuation-in-part of applications Ser. No. 761,368, July 11, 1968, and Ser. No. 805,044, Mar. 6, 1969, which are, respectively, continuations of applications Ser. No. 520,204, Jan. 12, 1966, and Ser. No. 541,497, Apr. 11, 1966. This application Oct. 2, 1969, Ser. No. 863,379

Claims priority, application France, Jan. 22, 1965, 3,085; Apr. 13, 1965, 12,941

Int. Cl. C01b *17/04*

U.S. Cl. 23—225R 4 Claims

Sulfur is prepared by the simultaneous introduction of hydrogen sulfide and sulfur dioxide into an aqueous medium containing from 10 to 120 grams sodium chloride and from 0.6 to 85 grams magnesium sulfate per liter.

3,595,967

BASE OIL STOCK FOR FIVE-GRADE LUBRICANT FOR INTERNAL COMBUSTION ENGINES

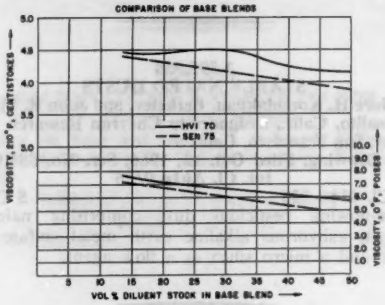
Richard L. Riedel, Bay Village, and Richard D. Schieman, Avon Lake, Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Filed Sept. 25, 1969, Ser. No. 860,958

Int. Cl. C10g *41/00*

U.S. Cl. 208—19 5 Claims

A blended motor oil base stock for gasoline internal combustion engines is provided which is usable the year round despite extreme climatic conditions. The base oil is formulated to meet specifications for a SAE 10W50 five-grade motor oil when suitable additives are incorporated



therein. The motor oil comprises a blend of two neutral oils and a dewaxed catalytically cracked cycle oil.

3,595,968

PHOSPHATE ESTER ADDITIVES FOR LOW FOAM NONIONICS

William L. Groves, Jr., Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.

No Drawing. Filed June 9, 1969, Ser. No. 831,718

Int. Cl. B01d *19/04;* C11d *3/36, 7/48*

U.S. Cl. 252—99 2 Claims

Organic phosphate ester additives, when blended with low foam nonionic compounds, suppress foam generated by proteinaceous soil on particules being cleaned. The esters are produced by phosphorylation of C_{16} to C_{20} alcohols, the 1-mole ethylene oxide adduct of 16 to 20 carbon alcohols, their blends, an alcohol-1-mole ethoxylate mixture, or a blend of ethylene oxide adducts of a C_{16} to C_{20} alcohol wherein the 1-mole adduct is optimized.

3,595,969

ANAEROBIC ADHESIVE COMPOSITION

Thomas H. Shepherd, Hopewell, and Francis E. Gould, Princeton, N.J., assignors to Princeton Chemical Research, Inc., Princeton, N.J.

No Drawing. Continuation-in-part of abandoned application Ser. No. 541,429, Mar. 9, 1966. This application Aug. 13, 1969, Ser. No. 849,893

Int. Cl. C09j *3/14, 5/10;* C07c *69/76*

U.S. Cl. 260—28.5 6 Claims

An anaerobic adhesive consists of a half-ester of (1) a tetracarboxylic acid having an aromatic nucleus with the carboxylic acid groups being attached thereto and (2) a hydroxy lower alkyl methacrylate. This is a continuation-in-part of application S.N. 541,429 filed Mar. 9, 1966, now abandoned.

3,595,970

PROCESS FOR HARDENING EPOXY RESINS WITH FLUOPHOSPHORIC ACID

Ernst Nolken, Frankfurt am Main, Germany, assignor to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed May 19, 1969, Ser. No. 825,938

Claims priority, application Germany, May 28, 1968, P 17 70 506.5

Int. Cl. C08g *30/12*

U.S. Cl. 260—47 7 Claims

Process for hardening epoxy compounds having more than one epoxy group per molecule, if desired with addition of lactones or copolymerizable cyclic ethers, comprising using fluophosphoric acid, if desired in admixture with acid phosphorus compounds as hardener for epoxy

resin to provide for low temperature hardening, increased hardening rate, and improved mechanical properties of the hardened resin.

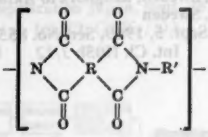
3,595,971

PROCESS FOR THE MANUFACTURE OF POLYIMIDES

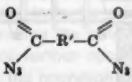
Erich Behr, Troisdorf, Germany, assignor to Dynamit Nobel AG, Troisdorf, Germany

No Drawing. Filed July 3, 1969, Ser. No. 839,807
Claims priority, application Germany, July 4, 1968, P 17 70 796.9
Int. Cl. C08g 20/32
U.S. Cl. 260—47 8 Claims

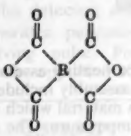
Process for preparing polyimides containing units having the following formula:



wherein R and R' each represent at least one aliphatic, aromatic or cycloaliphatic radical which may be substituted and which may contain hetero atoms comprising reacting a dicarboxylic acid diazide having the formula:



wherein R' has the same meaning as given above with a tetracarboxylic acid dianhydride having the formula:



wherein R has the same meaning as given above, at a temperature of from 0 to 300° C. The adhesive compositions may contain minor amounts of adjuvants such as inert fillers or extenders, methyl cellulose, potassium tripolyphosphate, sodium acetate and mixtures thereof.

3,595,972

OXIRANE AND EPISULFIDE POLYMERIZATION USING CATALYSTS BASED ON ALUMINUM PYROLATE

Arlen B. Mekler, Wilmington, Del., and Alfred E. Borchelt and Richard W. Sauer, Cherry Hill, N.J., assignors to Atlantic Richfield Company, Philadelphia, Pa.

No Drawing. Original application Mar. 2, 1967, Ser. No. 619,937, now Patent No. 3,489,691. Divided and this application Aug. 11, 1969, Ser. No. 862,128
Int. Cl. C08g 23/14
U.S. Cl. 260—79R 4 Claims

The pyrolysis of alkylaluminum compounds in a non-oxidizing, non-hydrolyzing environment produces a catalytically active solid which is characterized by the evolution of a hydrocarbon gas upon hydrolysis. Preferably, an alkylaluminum compound is heated at temperatures in excess of 400° F. for a time in excess of 6 hours. The catalyst can be utilized to promote various chemical reactions such as alkylation, polymerization, particularly epoxide polymerization, isomerization, dehydrogenation, hydrogenation, condensation, dealkylation, arylation, acylation and disproportionation. Various improvements are also obtained when this catalyst is combined with either a Lewis base, aluminum chelate or water.

3,595,973

N-PARA SECONDARY HYDROCARBON AMINO PHENYLMORPHOLINES

Richard W. Kibler, Cuyahoga Falls, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio

No Drawing. Original application July 21, 1965, Ser. No. 473,821. Divided and this application Mar. 17, 1969, Ser. No. 829,826
Int. Cl. C07d 87/40
U.S. Cl. 260—247 8 Claims

N(p-sec. aminophenyl) morpholine and piperazine and 2,6-dimethyl morpholine compounds are disclosed which are rubber antiozonants.

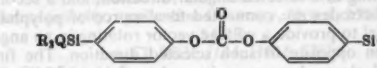
3,595,974

BIS-SILYLPHENYL CARBONATES

Norman C. Lloyd, Cardiff, Glamorgan, Christopher A. Pearce, Cowbridge, Glamorgan, and Ian Pattison, Penarth, Glamorgan, Wales, assignors to Midland Silicones Limited, Reading, Berkshire, England

No Drawing. Filed May 21, 1969, Ser. No. 826,730
Claims priority, application Great Britain, May 29, 1968, 25,831/68; Oct. 9, 1968, 47,800/68
Int. Cl. C07f 7/02, 7/04
U.S. Cl. 260—448.2B 11 Claims

Bis-silylphenylcarbonates of the general formula



where Q is H, halogen, alkoxy, monovalent hydrocarbon radical or —OH, and R is alkyl, alkenyl or aryl radical and preparation thereof by reacting the corresponding silylated phenols with an ester-forming derivative of carbonic acid such as phosgene and corresponding polymers and copolymers prepared by hydrolysis of Q groups from the silicon atoms.

3,595,975

DISINFECTING COMPOSITIONS

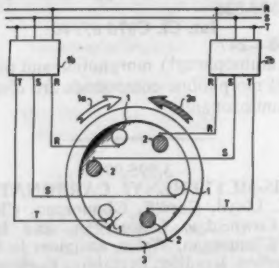
Claude Gauvreau, Ville la Salle, Quebec, Canada, assignor to Holliston Laboratories, Inc., Boston, Mass.

No Drawing. Continuation of application Ser. No. 500,225, Oct. 21, 1965. This application July 29, 1969, Ser. No. 854,009
Int. Cl. A01n 9/22
U.S. Cl. 424—263 21 Claims

This invention relates to antiseptic compositions for inhibiting the growth of micro-organisms. More particularly, the invention relates to such compositions having high activity in that their phenol coefficients are large, including as one active constituent a halide salt of cetyl pyridinium and as a second active constituent a member of the group of organic compounds all having ten carbon atoms consisting of the terpenes and their oxygenated derivatives.

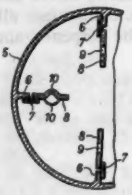
ELECTRICAL

3,595,976
METHOD AND APPARATUS FOR ELECTROSLAG REMELTING
Manfred Wahlster, Bochum-Stiepel, and Alok Choudhury, Hattingen, both of, Germany, assignors to Rheinstahl Hutenwerke Ag., Essen, Germany
Filed Feb. 26, 1970, Ser. No. 014,594
Claims priority, application Germany, Feb. 27, 1969, Feb. 27, 1969, G 69 07 777;P 19 09 866.9
Int. Cl. H05b *3/60*
U.S. Cl. 13—12 **11 Claims**



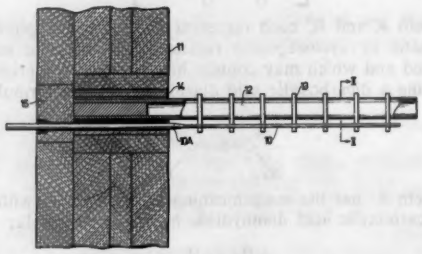
In a method and apparatus for electroslag remelting ingots, using plural electrodes connected to a source of polyphase alternating current, a first set of *n* electrodes are connected to a source of polyphase AC potential to provide a voltage vector rotating in a selected angular direction, and a second set of *n* electrodes are connected to a source of polyphase AC potential to provide a voltage vector rotating in an angular direction opposite to such selected direction. The first and second electrodes are positioned in a mold with each electrode of one set located between a pair of electrodes of the other set, and the electrodes are energized to effect the electroslag remelting operation. Preferably the electrodes of the two sets are arranged in alternation on a common circle. Novel bus bar and clap means are facilitating adjustment and replacement of electrodes. More than two sets of electrodes may be used, provided the number of electrodes in each set is equal to the number of electrodes in each other set. Preferably, the electrodes are connected to terminals of a low frequency inverter system furnishing a Y-connected polyphase current, and the junction of the Y-connection is connected to the bottom of the mold.

3,595,977
SELF-BAKING ELECTRODES FOR ELECTRIC ARC FURNACES
Bruno Orlando, Milan, Italy, assignor to Kinglor, Finanz-und Beratungsanstalt, Eschen, Liechtenstein
Filed Sept. 19, 1969, Ser. No. 859,428
Claims priority, application Switzerland, Nov. 28, 1968, 17,784/68
Int. Cl. H05b *7/06*
U.S. Cl. 13—18 **4 Claims**



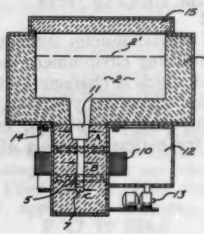
A self-baking electrode of the Soderberg type for electric arc furnaces comprises an outer metal sleeve containing the electrode mixture and internal reinforcing members for the electrode mixture, said reinforcing or structural members being electrically insulated from the outer metallic sleeve. The internal wall of the sleeve preferably is provided with radial ribs extending the whole length of the sleeve and the reinforcing members are attached to the ribs by means of insulating strips.

3,595,978
ELECTRIC RESISTANCE HEATING ASSEMBLY
Erik Stenfors; Ewert Malm, and Bengt Magnusson, all of Hallstahammar, Sweden, assignors to Aktiebolaget Kanthal, Hallstahammar, Sweden
Filed Sept. 5, 1969, Ser. No. 855,657
Int. Cl. H05b *3/12*
U.S. Cl. 13—25 **14 Claims**



An electric resistance heating assembly suitable for insertion in a furnace. The assembly includes a resistance heating element consisting of a material which is plastically deformable at its operating temperature. The heating element is in the form of elongated members which are mounted substantially horizontally. The assembly further includes a heat resistant carrier which is capable of supporting the heating element at several points along substantially its entire length in such a way that the heating element is substantially free radiating. The assembly, comprising the heating element and the supporting carrier is mountable as a unit in the furnace or other area to be heated.

3,595,979
INDUCTION FURNACES
Wilbur E. Shearman, Cortland, Ohio, assignor to Ajax Magnethermic Corporation, Warren, Ohio
Filed Jan. 28, 1970, Ser. No. 6,441
Int. Cl. H05b *5/14*
U.S. Cl. 13—29 **13 Claims**



There is disclosed herein an induction furnace of the submerged resistor type for melting metals wherein a throat is interposed between the hearth and the secondary loop and that portion of the throat at its intersection with a central

channel of the secondary loop has a portion of an axial dimension substantially greater than the axial dimension of said center channel and substantially greater than the actual dimension of a bottom channel, said axial dimensions being those parallel to the axis of primary coils threading the secondary loop and each of the channels has a major portion of its length of substantially uniform cross section.

3,595,980

ELECTRONIC MUSICAL INSTRUMENT WITH A PERCUSSION SOUND PRODUCING DEVICE

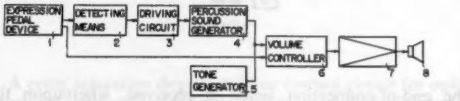
Norio Tomisawa, Hamamatsu-shi, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Shizuoka-Ken, Japan

Filed Sept. 16, 1969, Ser. No. 858,352

Claims priority, application Japan, Sept. 25, 1968, 43/83145

Int. Cl. G10k *1/02*

U.S. Cl. 84—1.24 **8 Claims**



An electronic musical instrument includes an expression pedal device for controlling the tone volume of the musical tone signal. The device further operably cooperates with a detector for detecting the operation of the expression pedal and generating an electric signal. A driving pulse generator which generates a driving pulse upon receipt of the output electric signal from the detector; and a percussion sound generator which generates percussion sound signals in response to the driving pulse. Percussion sounds are produced according to the operation of the expression pedal.

3,595,981

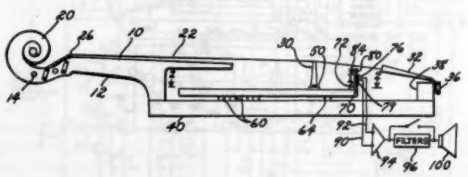
ELECTRONIC STRINGED MUSICAL INSTRUMENT WITH PLURAL RESONATORS AND PICKUP

Alvin S. Hopping, Nolan's Point, P.O. Box 34, Lake Hopatcong, N.J.

Filed July 31, 1969, Ser. No. 846,473

Int. Cl. G10f *1/02*

U.S. Cl. 84—1.16 **7 Claims**



An electronic stringed musical instrument in which the vibrations of the strings are transmitted to resonant beams, the vibrations in said beams are transmitted to a common electromechanical transducer, and the electricaL signal thus generated is amplified and converted into sound.

3,595,982

SUPERCONDUCTING ALTERNATING CURRENT CABLE

Wilhelm Kafka, Tennenlohe, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

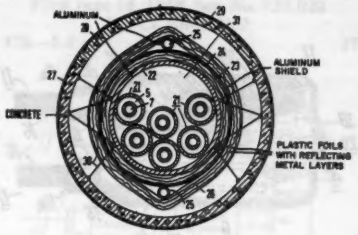
Filed Dec. 18, 1968, Ser. No. 784,809

Claims priority, application Germany, Dec. 20, 1967, P 16 40 750.4

Int. Cl. H01b *7/34, 9/04*

U.S. Cl. 174—15 **26 Claims**

A superconducting alternating current cable has a space for conducting a fluid of insulating helium and a carrier member for conducting a fluid of cooling helium. The carrier member maintains the insulating helium separate from the cooling helium, the insulating helium being kept at a pressure different from that of the cooling helium.



3,595,983

DEVICE FOR PASSING A TENSION SUPPLY LINE THROUGH THE COVER OF AN ELECTRIC FILTER

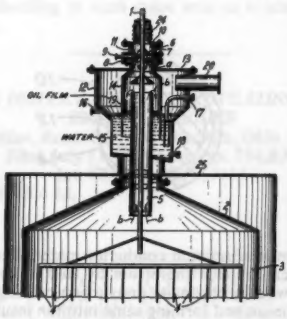
Fritz Muller, Knapsack near Cologne; Friedrich-Wilhelm Kampmann, Liblar; Hermann Niermann, Bliesheim, and Hugo Werner, Hermulheim near Cologne, all of, Germany, assignors to Knapsack Aktiengesellschaft, Knapsack near Cologne, Germany

Filed Oct. 6, 1969, Ser. No. 863,890

Claims priority, application Germany, Oct. 4, 1968, P 18 01 143.3

Int. Cl. B03c *3/34*; **H01b** *17/26*

U.S. Cl. 174—31.5 **11 Claims**



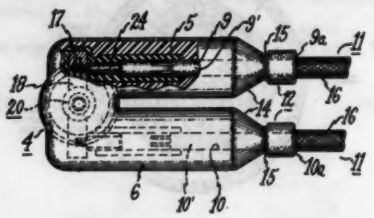
Lead-in device for passing a tension supply line or conductor through the cover of an electric filter down to its spray system, the tension supply line or conductor being concentrically surrounded by a duct arranged to run from the filter cover to the interior of the filter. The tension supply line or conductor is arranged to be surrounded by an insulator by positioning the said insulator above the filter cover so as to be spaced therefrom and so as to be radially spaced from the tension supply line or conductor, and an insulating bush is secured to the tension supply line or conductor at a position below the insulator. The insulating bush is arranged to be surrounded by a barrier disc so as to leave a barrier slit, and the space left above the barrier disc is occupied by a sealing gas maintained under overpressure with respect to the pressure prevailing inside the filter.

3,595,984

POWER CABLE TERMINATION

Henry N. Tachick, Pittsfield, Mass., assignor to General Electric Company

Filed May 11, 1970, Ser. No. 36,146
Int. Cl. H02g 15/02; H01r 11/32
U.S. Cl. 174—72 R 6 Claims



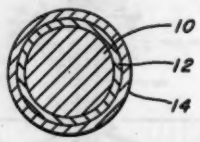
A tee connector for a pair of power distribution cables and a rigid insulating bushing, comprising a central housing having a pair of parallel-disposed cable termination legs, and a relatively perpendicular leg that is adapted to be directly coupled in watertight, voltage grading relationship to a non-flexible transformer bushing. The housing is capable of withstanding arcing and physical stresses so that the tee connector may be disconnected from the transformer without requiring deenergization of the cable-transformer system. The tee connector is further provided with a conductive coating disposed over its outer surface to equalize voltage gradients, and it includes flexible sealing means for receiving the cables in watertight relationship.

3,595,985

CONVERSION COATED ALUMINUM CONDUCTOR AND METHOD FOR PREPARATION THEREOF

Walter G. Zelley, Lower Burrell, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Aug. 26, 1969, Ser. No. 853,048
Int. Cl. H01b 7/28
U.S. Cl. 174—119 R 8 Claims



Preparation of aluminum conductor material and insulated multistrand cable made therefrom by zinc treatment of aluminum followed by chromate conversion coating of the thus treated aluminum and forming same into the insulated cable.

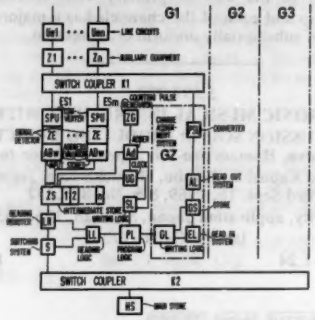
3,595,986

CENTRAL AUTOMATIC CHARGE DETERMINATION IN TELETYPEWRITER EXCHANGE SYSTEM

Hans-Wolfgang Rathje, Pullach, Isartal, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Sept. 23, 1969, Ser. No. 860,331
Claims priority, application Germany, Oct. 1, 1968, P 18 00 335.5
Int. Cl. H04l 11/00
U.S. Cl. 178—2 F 10 Claims

Automatic determination of information concerning long distance communication connections, such as in a teletypewriter exchange system. An input store is seized by auxiliary equipment associated with a seized line circuit, upon initiation of a call, and information concerning the connection is transmitted to the input store and from there to a common intermediate store. Upon completion of the connection, the input store is disconnected, but charge information is automatically accumulated in the intermediate store until the end-of-connection signal is received, whereupon the charge information in the intermediate store is read into a common main store.

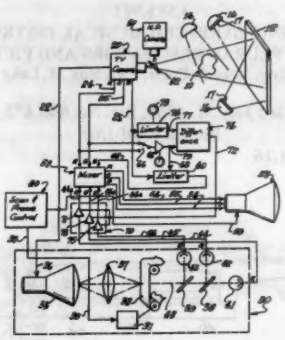


3,595,987

ELECTRONIC COMPOSITE PHOTOGRAPHY

Petro Vlahos, Tarzana, Calif., assignor to The Association of Motion Picture & Television Producers Inc., Hollywood, Calif.

Filed Feb. 20, 1969, Ser. No. 801,083
Int. Cl. H04n 5/22
U.S. Cl. 178—5.2 R 16 Claims



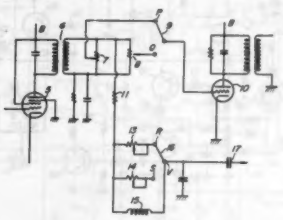
Separate foreground and background scenes are combined to form a composite color television picture or color motion picture film by electronic manipulation of respective sets of color component video signals, one set representing the foreground scene with an illuminated backing, typically blue, and the other set representing the background scene. Blue from the foreground backing is eliminated from the composite picture by electronically limiting the foreground blue signal to a selected function of the green signal. Portions of the background that are covered by foreground objects are eliminated in the composite picture by gating the background video signals under control of color discriminating circuitry which compares the foreground blue and green (or red) color component signals. Both the discriminating circuits and the gating circuits act proportionally, so that partially transparent objects of the foreground are correctly distinguished, making the background scene partially visible through such objects in the composite picture.

3,595,988

MANUAL HUE AND SATURATION CONTROLS FOR A COLOR TELEVISION RECEIVER

Yukio Kawamata, and Kozo Yatsushiro, both of Ibaragi, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Feb. 2, 1970, Ser. No. 7,848
Claims priority, application Japan, Feb. 6, 1969, 44/9585
Int. Cl. H04n 9/48
U.S. Cl. 178—5.4 R 5 Claims



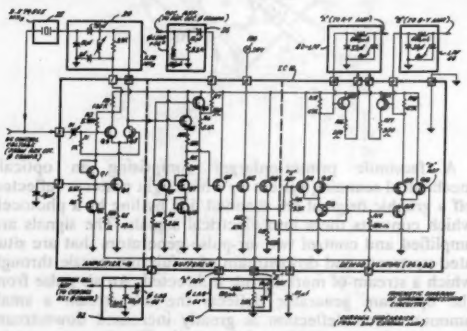
A color saturation degree and hue control circuit for color receivers, wherein a semifixed variable resistor for color saturation degree control and a color saturation degree controlling variable resistor which can be controlled by an operator are provided between the output circuit of a first color band-pass amplifier and the input circuit of a second band-pass amplifier, said two resistors being adapted to be changed over by means of a changeover switch, while other two resistors are provided for the purpose of effecting hue control, these two resistors being also adapted to be changed over, thereby controlling hue to proper levels.

3,595,989

DC-COUPLED CHROMA PROCESSING INTEGRATED CIRCUIT

Leander H. Hoke, Jr., Southampton, Pa., assignor to Philco-Ford Corporation, Philadelphia, Pa.

Filed Feb. 25, 1970, Ser. No. 13,889
Int. Cl. H04n 9/50
U.S. Cl. 178—5.4 SD 9 Claims



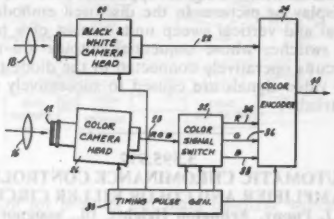
A chroma-processing integrated circuit (IC) which provides an amplifier for a color television receiver's chroma reference oscillator, buffers for said oscillator's output, and X- and Z-chroma demodulators. The output of said amplifier is direct current coupled, via the buffers, to the demodulators; thus no coupling capacitors, which would be external to the IC, are required. The buffers, which include appropriate AC and DC level shifting circuitry, also supply the chroma reference oscillator's output to the receiver's chroma kill and reference oscillator phase comparators. The transistors of the IC are temperature compensated by means of a network designed to shift the bias of said transistors, in response to temperature variations, in a direction which offsets the effect of such temperature variations.

3,595,990

COLOR CAMERA

Clayton A. Washburn, 24 Andrea Lane, Thornwood, N.Y.

Filed June 14, 1968, Ser. No. 737,020
Int. Cl. H04n 9/22
U.S. Cl. 178—5.4 27 Claims



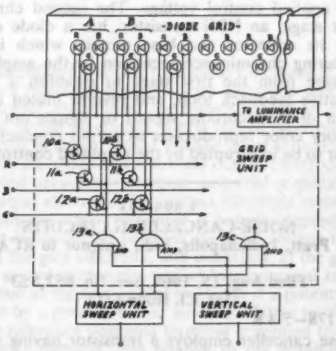
A color camera including a first image pickup cathode-ray tube for developing a signal representative of the brightness or luminance content of an image, and a second such cathode-ray tube generating a signal representative of chrominance content of the image. Scanning of the two cathode-ray tubes is synchronized and registered with respect to boundary regions in the target of one of the tubes. The boundary regions may be provided through the use of adjacent strips of illuminated and nonilluminated areas of the target. The two tubes typically focus on a scene through lens systems mechanically and/or optically coupled together. A scanning adjustment is made in accordance with view angle shift between the cathode-ray tubes in order to correct for distortion. The cathode-ray tube for generating chrominance signal components may employ a cylindrical lens structure on its faceplate in conjunction with dichroic mirror or other color separation elements to divide all portions of the image into at least two of the three primary colors red, green and blue through all areas of the cathode-ray tube target. Scanning in this cathode-ray tube is by steplike motion with the beam dwelling in each color area as it scans across the tube target.

3,595,991

COLOR DISPLAY APPARATUS UTILIZING LIGHT-EMITTING DIODES

Calvin D. Diller, Route 2, Box 46, Bluffton, Ohio

Filed July 11, 1968, Ser. No. 744,038
Int. Cl. H04n 9/12, 3/14
U.S. Cl. 178—5.4 EL 3 Claims



A two-dimensional visual display apparatus for presenting color television information received from a composite

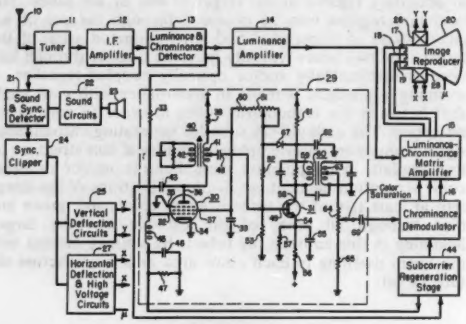
television signal. In place of a conventional cathode-ray tube, the apparatus has a display panel comprised of a plurality of closely spaced triads of light-emitting diodes arranged in a plurality of closely spaced horizontal rows. Each triad consists of three closely spaced light-emitting diodes, each having an electroluminescent output of a different primary color. Conventional circuitry is used to detect and convert a composite color television signal into its luminance, chrominance, and scanning components. A grid sweep unit is provided to successively apply the amplified video signals across the rows of diode triads causing them to be actuated in accordance with the signals applied thereto to provide the visual display or picture. In the disclosed embodiment, the horizontal and vertical sweep units consist of a pyramid of bistable switches whose sequential outputs are applied to logic circuits operatively connected to the diode triads such that the video signals are caused to successively sweep the rows of triads.

3,595,992

AUTOMATIC CHROMINANCE CONTROLLED AMPLIFIER AND COLOR KILLER CIRCUIT

Dwight J. Poppy, Arlington Heights, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Filed July 2, 1969, Ser. No. 838,625
Int. Cl. H04n *9/48*
U.S. Cl. 178—5.4 AC **8 Claims**



A color television receiver has a two-stage chrominance channel for amplifying a detected chrominance subcarrier signal. The first chrominance amplifier stage in this channel, a pentode vacuum tube, is gain controlled by an applied control voltage amplitude related to the chrominance signal, and serves to concurrently amplify both the chrominance signal and the applied control voltage. The second chrominance amplifier stage, an NPN transistor, has a diode connected between its collector and base circuits which is forward biased during chrominance reception by the amplified control voltage from the first stage to establish a stabilizing degenerative feedback loop, and reverse biased during the reception of monochrome signals or signals not providing satisfactory color reproduction to permit conduction in the transistor to be interrupted by the amplified control voltage.

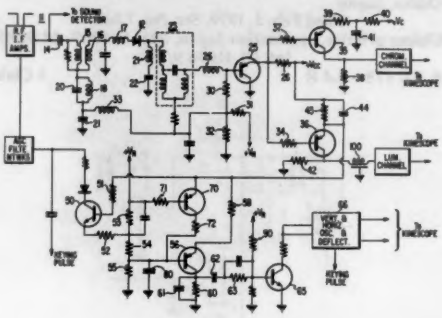
3,595,993

NOISE-CANCELLING CIRCUITS

John N. Pratt, Indianapolis, Ind., assignor to RCA Corporation

Filed Aug. 25, 1969, Ser. No. 852,853
Int. Cl. H04n *9/12*
U.S. Cl. 178—5.4 R **8 Claims**

A noise canceller employs a transistor having an emitter electrode direct coupled to a source of composite signals and a collector electrode coupled to the input electrode of a sync amplifier. The base electrode as biased from a reference voltage divider causes the transistor to conduct for noise pulses above sync tips. The conduction of the transistor tends to cut off the sync amplifier, while further serving to load the composite signal source and thereby reduce the magnitude of noise pulses applied to an AGC circuit also coupled to said source.

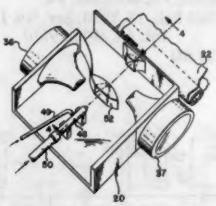


3,595,994

FACSIMILE PRINTER-ENLARGER UTILIZING A DISPLACEABLE MARKING STREAM

Franklin M. Whitman, 3608 Bagley Avenue N., Seattle, Wash.

Filed Jan. 17, 1969, Ser. No. 791,970
Int. Cl. G01d *15/18*; H04n *1/24*
U.S. Cl. 178—6.6 R **19 Claims**

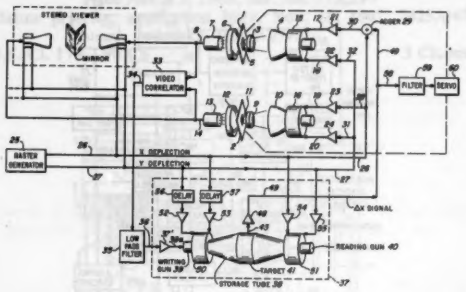


A facsimile printer-enlarger comprising an optical-mechanical scanning system by which light patterns reflected off a graphic original are scanned line by line by a photocell which converts them into electrical signals. The signals are amplified and control two air-pulse generators that are situated upstream and downstream of a fulcrum nozzle through which a stream of marking ink is directed. An air pulse from the upstream generator deflects the ink stream a small amount which deflection is greatly increased downstream due to the leverage action of the nozzle. The downstream air-pulse generator assists in the deflection. A printout is established as the ink stream strikes a recording surface. The printout is enlarged either by optically increasing the size of the reflected light patterns, mechanically enlarging the scanning ratio of the photocell and printout, or both. In a modified form the downstream air-pulse generator may be a constant airstream to act as a biasing force. In a second modified form either pulse generator may utilize a constant airstream that is modulated in accordance to the signals received. In still another form the pulse generators are staged for recording enlargements or for general fluid-amplification applications. A method of making an enlarged facsimile is also disclosed.

3,595,995
AUTOMATIC STEREO INSTRUMENT FOR REGISTRATION OF SIMILAR STEREO PHOTOGRAPHS

Gilbert L. Hobrough, Vancouver, British Columbia, Canada, assignor to Itek Corporation, Lexington, Mass.

Filed Sept. 11, 1968, Ser. No. 758,954
Int. Cl. H04n 9/54; G01c 11/18
U.S. Cl. 178—6.8 12 Claims

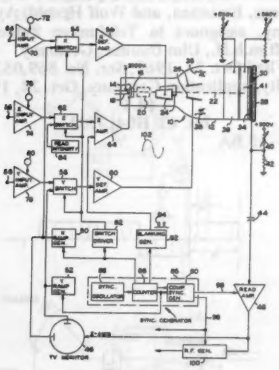


This invention pertains to the art of photogrammetry and is concerned primarily with instruments that achieve the registration of similar stereo photographic images a automatically by electronic scanning means. In particular, the invention concerns the transformation of such images as required to achieve registration and provides an improved method of establishing the complex high order transformations necessary when correlating stereo photographs of rough terrain.

3,595,996
CHARGE IMAGE STORAGE METHOD AND APPARATUS

Peter J. Unger, Beaverton, Oreg., assignor to Textronix, Inc., Beaverton, Oreg.

Filed Dec. 6, 1968, Ser. No. 781,764
Int. Cl. H01j 29/39
U.S. Cl. 178—6.8 14 Claims

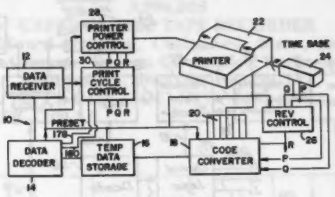


A cathode-ray storage tube is employed for bistably storing a charge image corresponding to input signal information and for providing an electrical readout corresponding to such information. For purposes of electrical readout, the tube's electron beam is caused to scan, raster fashion, over the stored image. An electrical signal corresponding to the stored image is produced on the storage tube's target electrode. The input signal applied to the apparatus is sampled at times during the retrace interval of horizontal raster lines, substantially concurrently with the occurrence of the input signal.

3,595,997
DATA READOUT SYSTEM

Lester Q. Krasin, Dallas, Tex., assignor to Seismograph Service Corporation, Tulsa, Okla.

Filed Oct. 17, 1968, Ser. No. 768,327
Int. Cl. H04l 15/26
U.S. Cl. 178—23 12 Claims

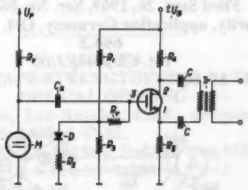


A system for printing out plain language words or word groups in response to a single data input signal comprises means for decoding and temporarily storing data input signals received from a remote transmission source, a printout means responsive to input impulses, time base means mechanically coupled to said printout means for providing sequential synchronizing outputs for each actuation of the printout means, and programmable converter means for combining the synchronizing outputs from the time base means with a data input signal for producing a sequence of coded pulses for actuating said printout means to print a predetermined combination of characters in accordance with the established converter programming.

3,595,998
POLARITY INDEPENDENT PREAMPLIFIER FOR SOUND TRANSMITTERS

Werner Fidi, Baden, and Bernhard Weingartner, Vienna, both of, Austria, assignors to Akustische u. Kino-Gerate Gesellschaft m.b.H., Wien, Germany

Filed July 1, 1969, Ser. No. 838,091
Claims priority, application Austria, July 5, 1968, 6520/68
Int. Cl. H03f 3/00
U.S. Cl. 179—1 A 6 Claims

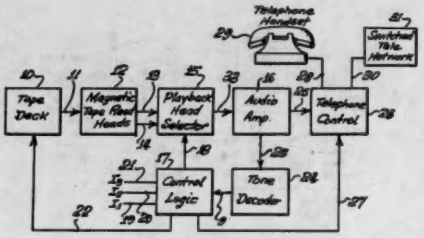


A preamplifier for sound transmitters includes at least one field effect transistor having a gate electrode and first and second output electrodes. An output circuit is connected across the output electrodes, a first output electrode resistor is connected between a feed voltage input terminal and the first output electrode and a second output electrode resistor is connected between a reference potential terminal and the second output electrode. The output electrode resistors have substantially the same resistance. A polarity dependent biasing circuit is connected between the feed voltage input terminal and the gate electrode, and maintains, at the gate, substantially a predetermined negative bias potential relative to the potential at the first output electrode if a potential which is negative by a predetermined amount relative to the potential at the reference potential terminal is applied to the feed voltage input terminal, and relative to the potential at the second output electrode if a potential which is positive by the predetermined amount relative to the potential at the reference potential terminal is applied to the feed voltage input terminal.

3,595,999
AUTOMATIC TELEPHONE ALARM APPARATUS

Martin Alan Cole, 10368 Starca, Whittier, Calif.

Filed Dec. 9, 1968, Ser. No. 782,344
Int. Cl. H04m *1/64, 11/04*
U.S. Cl. 179—6 D 8 Claims

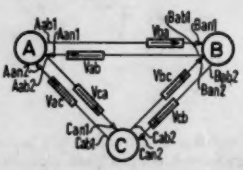


An automatic telephone alarm apparatus for transmitting simulated dialing pulses to a switched telephone network and prerecorded voice messages to the selected telephone instrument. Message groups are stored on multitrack magnetic tape and are played back using a standard audio tape cartridge playback unit. The specific track to be played back is determined by the presence of one or more external stimuli. The selection of a specific message group from the plurality of groups recorded on a single tape track is determined by a combination of the presence of one or more external stimuli and a detection circuit responsive to a specific recorded audio tone header which precedes each message. The occurrence of an external signal initiates the switching of the telephone line from a telephone instrument to the system's output, transmission of the recorded simulated selection pulses to the telephone network, and transmission of the recorded message to the selected telephone instrument.

3,596,000
PROCESS FOR TRANSMISSION OF MESSAGES IN TIME MULTIPLEX COMMUNICATION SYSTEM

Karl-Anton Lutz, and Karl-Heinz Neufang, both of Munich, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Sept. 26, 1969, Ser. No. 861,249
Claims priority, application Germany, Oct. 2, 1968, P 18 00 694.5
Int. Cl. H04j *3/00*
U.S. Cl. 179—15 AQ 4 Claims

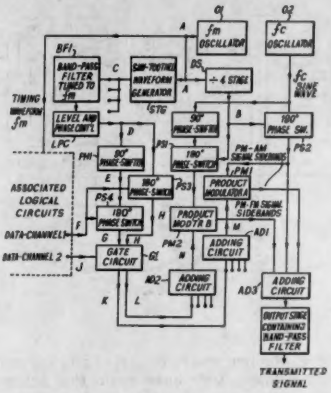


A time multiplex communication system for transmission of pulse code modulated signals, using several exchange stations. At each exchange station, varying delays in transmission are compensated for by insertion of delay lines in the transmission paths, to synchronize the pulse frames of the arriving lines with each other. The pulse frames of the departing lines are also synchronized with each other. At each exchange station, the next available time channel is assigned to a signal to be forwarded, as compared with the signal as it arrives at the station. The pulse frames of departing lines are delayed by a set time interval as compared with arriving lines, and the time slots within pulse frames which are assigned to arriving and departing signals are also so set, to require the minimum storage capacity at the exchange stations.

3,596,001
FREQUENCY DIVISION MULTIPLEXING

Adrian P. Clark, Taplow, England, assignor to British Telecommunications Research Limited, Taplow, England

Continuation of application Ser. No. 584,419, Oct. 5, 1966, now abandoned. This application Oct. 9, 1969, Ser. No. 866,136
Int. Cl. H04j *1/20*
U.S. Cl. 179—15 FD 2 Claims

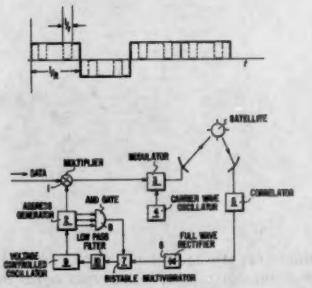


In a time division multiplex electrical signalling system having a main carrier modulated by a first group of subcarriers to produce signals in frequency bands of higher frequency than the main carrier and a second group of subcarriers arranged to modulate the main carrier to produce signals in frequency bands having lower frequency than that of the main carrier. Each subcarrier of the first group is modulated with respect to the main carrier by a respective information-bearing signal and each subcarrier of the second group is modulated with respect to a respective subcarrier of the first group by an information-bearing signal.

3,596,002
SYSTEM FOR TRANSMITTING BINARY-CODED DATA

Horst Ohnsorge, Erstetten, and Wolf Herold, Ay (Iller), both of Germany, assignors to Telefunken Patentverwertungsgesellschaft m.b.H., Ulm Danube, Germany

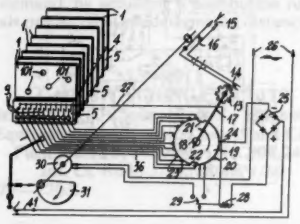
Filed Oct. 24, 1969, Ser. No. 869,053
Claims priority, application Germany, Oct. 24, 1968, P 18 04 14.1
Int. Cl. H04j *7/02*
U.S. Cl. 179—15 BA 6 Claims



A satellite link binary data transmission system including a plurality of ground stations capable of operating simultaneously, each station transmitting a cyclically repeated address code word and polarity modulating each such word according to the value of one data bit to be transmitted, the satellite

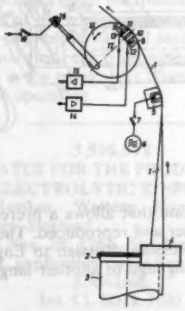
being arranged to combine all transmitted signals into a composite signal and each station being arranged to receive the composite signal and to extract therefrom the data directed to it by correlating the composite signal with its own address word.

3,596,003
AUTOMATIC PUNCHED MULTICARD DEVICE FOR CALL DIALING OF TELEPHONE NUMBERS
Raffaele Poli, Galleria Del Leone, 3, Bologna, Italy
Filed Nov. 13, 1968, Ser. No. 775,297
Claims priority, application Italy, Nov. 15, 1967, 7425A/67
Int. Cl. H04m *1/48*
U.S. Cl. 179—90 CS **3 Claims**



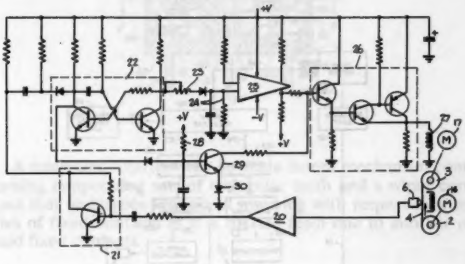
Automatic device for call dialing of stored telephone numbers by means of punched cards allowing to select one of a plurality of telephone numbers or addresses and dial such a selected number or address. Punched card system allows a substantial time saving and is particularly useful in direct dialing services.

3,596,004
VIDEO TAPE RECORDER WITH SOUND HEAD HAVING SEPARATE RECORD AND PLAYBACK ELEMENTS SHIFTABLE TO MAINTAIN A FIXED DISTANCE FROM THE VIDEO HEAD WHEEL
Rudolf Prochnow, Darmstadt-Eberstadt, Germany, assignor to Fernsch GmbH, Darmstadt, Germany
Filed Dec. 24, 1968, Ser. No. 786,643
Claims priority, application Germany, Dec. 27, 1967, P 15 24 840.5
Int. Cl. G11b *21/02*
U.S. Cl. 179—100.2 T **4 Claims**



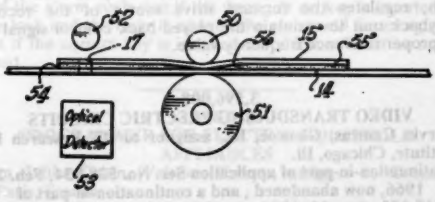
An apparatus for deriving at least two different information signals from a tapelike information carrier, especially the video signal and the sound signal of a television program from the magnetic tape of a video tape recorder by a rotating head wheel for the video signal and a combined sound head with one magnetic circuit for recording and another magnetic circuit for reproducing the sound signal in a longitudinal sound track, the gaps of the two magnetic circuits having a fixed distance in the direction of the sound track. The combined sound head is displaceable in the direction of the sound track, by such an amount that the gap of the reproducing magnetic circuit in the reproducing mode has the same distance from the head wheel as the gap of the recording magnetic circuit in the recording mode. The shifting of the combined sound head can be effected automatically, e.g. by an electromagnet, during change between recording and reproducing mode of the video tape recorder.

3,596,005
CAPSTAN-FREE TAPE RECORDER
Robert Edward Hamilton, Chelmsford, Mass., assignor to Viatron Computer Systems Corporation, Burlington, Mass.
Filed Jan. 13, 1969, Ser. No. 791,547
Int. Cl. G11b *15/32*, *15/52*; B65h *17/02*
U.S. Cl. 179—100.2 S **1 Claim**



A tape recording and playback device in which the recording tape is moved from a supply reel to a takeup reel at a constant tape speed and where the tape is driven by a drive motor coupled directly to the tape takeup reel. The tape speed is kept constant by a prerecorded control signal on the recording tape which is fed to the motor through a control or servoamplifier. The automatic adjustment of the takeup reel speed to provide a constant tape speed eliminates additional tape drive rollers or capstans and permits the tape to be run in either direction between the reels when a second motor is connected to the tape supply reel. When the system is driving a tape in the forward direction, the takeup reel motor supplies the power using the control system and the supply reel motor is used as a dynamic brake. When the tape is running in the opposite direction, the functions of the motors are reversed.

3,596,006
CASSETTE TAPE-STRENGTHENING PATCH AND OPTICAL OPENING
David W. Lawhon, Los Angeles, Calif., assignor to Capitol Records, Inc., Hollywood, Calif.
Filed Mar. 13, 1969, Ser. No. 806,968
Int. Cl. G11b *5/78*, *15/29*, *23/42*
U.S. Cl. 179—100.2 A **12 Claims**



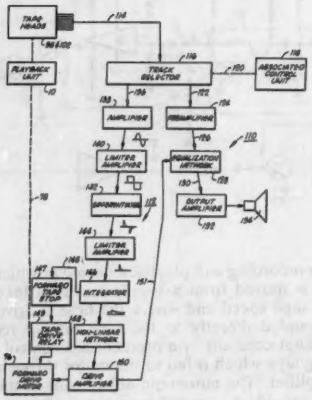
A combination of magnetic recording tape adapted to be mounted in a tape cassette and a strengthening patch therefore wherein the patch is connected to the recording tape at a point which would become worn by the tape cassette advance mechanism, the wear occuring when the end of tape is reached. An opening is inserted through the combination of the recording tape and the patch for optical sensing of the end of tape.

3,596,007

APPARATUS FOR VARIABLE SPEED PLAYBACK OF PLURAL TRACK RECORDS

David D. Price, Jr., and Lawrence R. De Bell, both of Oklahoma City, Okla., assignors to Economy Co., Oklahoma City, Okla., by said De Bell

Filed Aug. 27, 1968, Ser. No. 755,573
Int. Cl. G11b 15/52; G09b 5/04
U.S. Cl. 179—100.2 S 9 Claims



An apparatus for playback of plural tracks of recorded information at selectively different track record speeds, the apparatus consisting of a record playback unit capable of playing back a selected one of plural record tracks each carrying a control signal of predetermined, constant frequency, and having control circuitry for receiving playback control signal and converting it to a DC control voltage proportional to frequency for use in controlling the record playback speed of the playback unit. The DC control voltage is applied through a nonlinear network to control a drive amplifier which, in turn, regulates the forward drive motor of the record playback unit to maintain the played-back control signal at its proper reference frequency value.

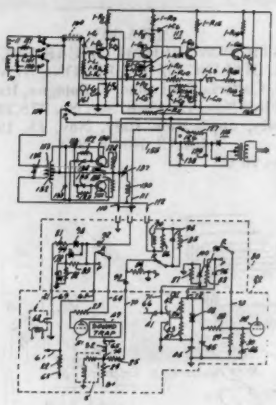
3,596,008

VIDEO TRANSDUCING ELECTRIC CIRCUITS

Marvin Camras, Glencoe, Ill., assignor to IIT Research Institute, Chicago, Ill.

Continuation-in-part of application Ser. No. 528,934, Feb. 21, 1966, now abandoned, and a continuation-in-part of 545,050, Apr. 25, 1966, now Patent No. 3,484,546, dated Dec. 16, 1969. This application June 27, 1967, Ser. No. 649,256
Int. Cl. G11b 5/44; H04n 5/78; H03f 1/34
U.S. Cl. 179—100.2 27 Claims

Monochrome and color television recording and playback circuitry for coupling with a standard broadcast receiver. Recording signals supplied to the recording head without further amplification, and with circuitry for maintaining a good visual display during recording, and circuitry for phase correction and pulse modification. Playback circuitry for



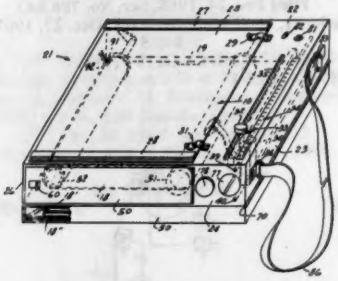
reduced thermal noise, phase correction and improved response. Frequency modulation sound on video track.

3,596,009

TRANSLATING MACHINE

Geoffrey C. Clifford, Utica, N.Y., and Charles H. Flubacker, Arlington Heights, Ill., assignors to Interpretaide Internationale, Inc., Utica, N.Y.

Filed Nov. 1, 1968, Ser. No. 772,492
Int. Cl. G11b 1/02, 5/56, 15/22
U.S. Cl. 179—100.2 3 Claims



A translating machine that allows a prerecorded message to be selected by a user and reproduced. The machine might translate English to Russian, Russian to English, English to Vietnamese or any language to another language, for example.

3,596,010

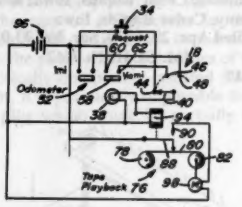
TRAVEL-DIRECTING DEVICE

Harry C. Patterson, Apt. 1506, Presbyterian Apts., Virginia Ave., Fort Myers, Fla.

Filed July 28, 1967, Ser. No. 656,803
Int. Cl. G11b 15/02, 31/00, 15/18
U.S. Cl. 179—100.2 S 6 Claims

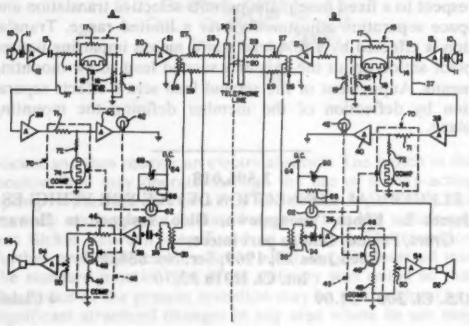
An automotive vehicle equipped with a tape playback device modified so that continuous movement of the tape is stopped after each message portion recorded thereon. Travel-directing information instructs the vehicle driver to

position a selector switch assembly for controlling operation of the tape playback device to resume message playback



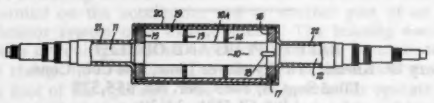
either on demand, by actuating a pushbutton request switch, or by signals produced at predetermined distances travelled.

3,596,011
GAIN-SWITCHING CIRCUITS
George Alexandrovich, Commack, N.Y., assignor to Fairchild Sound Equipment Corporation, Long Island City, N.Y.
Filed Mar. 18, 1969, Ser. No. 808,244
Int. Cl. H04b *3/20*; **H04m** *1/60*
U.S. Cl. 179—170.2 **14 Claims**



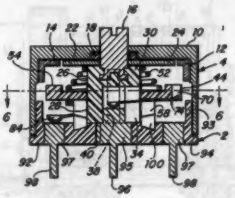
A system for communication between two stations over lines, and particularly telephone lines, in which each station has a transmitter channel and a receiver channel. In response to an outgoing signal from one station the gain of the transmitter channel of that station is expanded by an expander circuit and the gain of the receiver channel at the same station is suppressed to prevent acoustical feedback. In response to an incoming signal from the transmitter channel station, the expander circuit in the transmitter channel of the first station is prevented from operating.

3,596,012
APPARATUS FOR THE PRODUCTION OF ELECTROLYTIC TINPLATE
Jack Harrild Jordan, Wettern House, Dingwall Road, Croydon, Surrey, England
Filed Nov. 29, 1967, Ser. No. 686,782
Claims priority, application Great Britain, Nov. 30, 1966, 53662/66
Int. Cl. B01k *3/00*
U.S. Cl. 191—1 A **1 Claim**



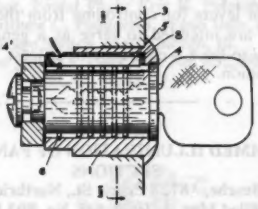
A conductor roll for use in the production of electrolytic tinplate has a cylindrical steel barrel with a coating of aluminum bronze on its outer surface and a coating of copper on the aluminum bronze coating.

3,596,013
ROTARY SWITCH WITH DETENT
George E. Pihl, Abington, Mass., assignor to Miniature Electronic Components Corp., Holbrook, Mass.
Filed Jan. 8, 1970, Ser. No. 1,509
Int. Cl. H01h *21/78, 19/58*
U.S. Cl. 200—11 EA **9 Claims**



A miniature rotary switch having a detent mechanism comprising cooperating sets of triangular teeth and a wiper contact that undergoes lifting and lowering with respect to a series of fixed contacts as it is rotated from one to another of said fixed contacts.

3,596,014
BURGLARPROOF LOCK
Uriel Erez, 31, Maalei Hazafim, Ramat Gan, Israel
Filed Apr. 25, 1969, Ser. No. 819,267
Int. Cl. H01h *27/00*
U.S. Cl. 200—44 **2 Claims**

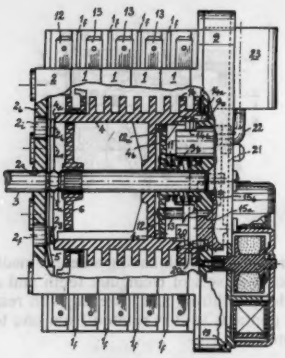


A burglarproof Yale-type lock includes a conductive strip positioned in the lock to be contacted by the tumblers when the wrong key is inserted in the lock to complete a circuit to energize an alarm. A second conductive strip may also be positioned in the lock which is normally in contact with the tumblers. A switch which is closed by opening the door or the like is positioned in the circuit between the second strip and the alarm such that if the wrong or no key is inserted in the lock and the door is opened the alarm will be energized, but if the correct key is inserted the alarm will not be energized.

3,596,015
PROGRAMMER FOR ELECTRIC HOUSEHOLD APPLIANCES
Jean Jullien-Davin, Valence, France, assignor to Grouzet, Paris, France
Filed June 16, 1969, Ser. No. 833,607
Claims priority, application France, June 21, 1968, 156,201
Int. Cl. H01h *7/08, 43/10*
U.S. Cl. 200—38 R **11 Claims**

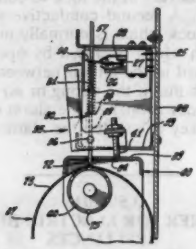
In a programmer for electric household appliances and having a continuously rotating reversing cam unit, a program cam unit which rotates in step-by-step motion, identical contactor elements capable of being actuated by the cams and stacked in any desired number, said contactor elements being

mounted between two end-plates and comprising male connectors which can be associated with movable connectors connected to contact-strips and fitted with contact-points, means for driving the program cams in step-by-step motion and associated with means for putting them temporarily out of action and at least one constant-speed electric motor, the fact that the end-plate which limits the stack of contactor elements on one side constitutes a separate contactor element which is adapted to receive stationary and movable



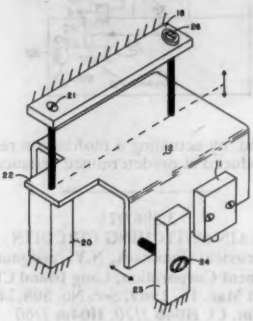
contacts and has a continuous surface which is pierced by a central hole which serves as a bearing for the cam shaft, by smooth holes for fixing the apparatus by means of screws engaged without previous tapping in the said holes which are so arranged as to permit all the usual fixing arrangements, and by holes for the pivotal mounting of the swivel-pins of effort-multiplication levers for controlling from the cams contact-strips which are intended to serve as a general switch and consequently to have a clearance of at least 3 millimeters in the open position.

3,596,016
PROGRAMMED ILLUMINATION OF PANEL DISPLAY SECTIONS
Kenneth A. Busche, 18728 Prarie St., Northridge, Calif.
Filed Mar. 3, 1969, Ser. No. 803,807
Int. Cl. H01h *43/08*
U.S. Cl. 200—46 **12 Claims**



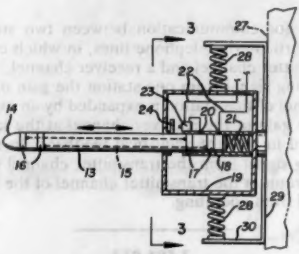
The disclosure concerns control apparatus, usable for controlling information displays, and including a bistable mechanical switching device adapted to be set and reset, and a programming element such as a sheet or drum movable between programming positions in which a shoulder or opening is selectively presented for controlling setting or resetting of the switch device as the element is further moved in its programming position.

3,596,017
MECHANICAL ADJUSTMENT MEANS FOR ELECTRICAL LIMIT SWITCHES
Winston F. Williams, Cedar Rapids, Iowa, assignor to Collins Radio Company, Cedar Rapids, Iowa
Filed Apr. 29, 1970, Ser. No. 33,019
Int. Cl. H01h *3/42*
U.S. Cl. 200—47 **12 Claims**



A mounting means for a positionable mounting plane with respect to a fixed base plane permits selective translation and space separation adjustments over a limited range. Translation is effected by a first lead screw means imparting limited pivot action about the axis of a second lead screw mounting means. Adjustment of the second lead screw effects separation by deflection of the member defining the mounting plane.

3,596,018
ELECTRICAL CONNECTION DEVICE FOR VEHICLES
James L. Elmes, Youngstown, Ohio, assignor to Howard Gross, Poland, Ohio, a part interest
Filed June 25, 1969, Ser. No. 836,355
Int. Cl. H01h *33/30*
U.S. Cl. 200—51.09 **4 Claims**

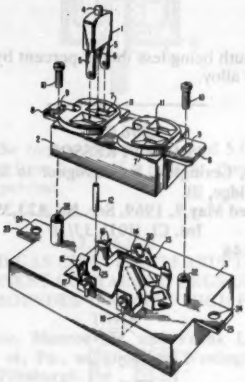


An electrical connection device is disclosed for establishing an electrical circuit between a relatively fixed stationary location and a movable vehicle and comprises a directional guide and connection receptacle mounted on the vehicle and an elongated probe carrying electrical conductors movably mounted on a fixed support and incorporating switch means which are actuated by the positioning of the probe relative to its environment and support means as by registry with the directional guide and connection receptacle on the vehicle.

3,596,019
SAFETY PLUG AND OUTLET
Henry W. Koester, 10 Wyndover Lane, Cos Cob, Conn.
Filed Sept. 5, 1969, Ser. No. 855,577
Int. Cl. H01r *33/30*
U.S. Cl. 200—51.09 **3 Claims**

Disclosed herein is a safety plug and outlet which may be readily interchanged for a standard electrical outlet and

which has a unique safety arrangement whereby it is practically impossible for a person employing the device of this invention to get an electrical shock when inserting the plug of an appliance or other equipment into the outlet. The device contemplates the use of a depressor in the plug which operates a switch in the positive line to the outlet so that no current flows to the positive contact blades of the outlet until the plug is practically completely inserted in the socket. By this arrangement, it is practically impossible for one to touch a prong of the plug which could be partially inserted in the



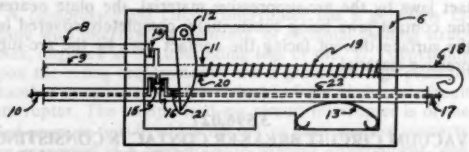
socket and thus receive an electrical shock. The switch in the positive line may operate through the use of a snap-acting spring so that the connection in the switch is positively and securely made or else is biased open so that the switch will not flicker between an off and on position. The invention further contemplates an adapter which may be inserted into the standard junction box of an ordinary wall outlet so that the device of the present invention may be used without any significant structural changes in any area where its use may be desired.

3,596,020

SWITCHING DEVICE FOR OPERATING WARNING SIGNAL LAMPS IN A MOTOR VEHICLE

Jack L. Warren, P. O. Box 5784, Reno, Nev.

Filed Aug. 11, 1969, Ser. No. 849,618
Int. Cl. H01h *3/14*
U.S. Cl. 200—61.89 **3 Claims**



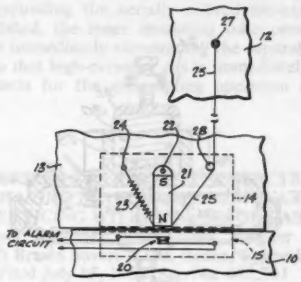
A switching device is disclosed which includes a housing mounted on the accelerator rod or another part of an accelerator system of a motor vehicle. The housing encompasses switching elements which are operative in response to the change in direction of the pressure on the accelerator by the foot of the operator. The switching elements operate an indicator device at the rear of the vehicle to alert a driver in a trailing vehicle that the pressure on the accelerator pedal is either being advanced for greater speed, backed off for even speed or the foot entirely removed therefrom.

3,596,021

BURGLAR ALARM OR THE LIKE

Benno Bensiyon Saul, 5830 St. Luc, Apt. 16, Montreal, Quebec, Canada

Filed Nov. 28, 1969, Ser. No. 880,764
Claims priority, application Canada, Dec. 2, 1968, 036,658
Int. Cl. H01h *3/02*
U.S. Cl. 200—61.93 **5 Claims**



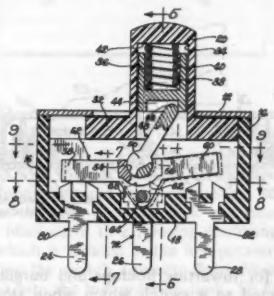
A magnetically operated switch is embedded in a frame member of a window or door, and is operable by the proximity of a magnet mounted on a cooperating movable member, thus detecting bodily movement of the movable member. The magnet is pivotable and arranged to operate the switch if it is displaced from its normal position. It is spring-urged away from normal position, but held therein by a cord extending across the face of a panel of the movable member, so that interference with such panel will actuate the switch and give an alarm.

3,596,022

SWITCH WITH WIPING CONTACT STRUCTURE

Richard B. Gaber, Forest Park; Eric H. Petersen, Evergreen Park, and Matthew C. Podgorski, Wood Dale, all of, Ill., assignors to Chicago Switch, Inc., Chicago, Ill.

Filed June 13, 1969, Ser. No. 832,982
Int. Cl. H01h *13/28*
U.S. Cl. 200—67 **9 Claims**



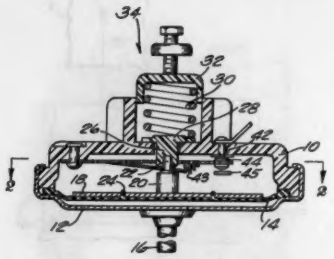
A switch construction comprising a base, at least one stationary contact associated with the base and a movable contact in the form of a rocker. The seat supporting the rocker permits pivotal and shifting movement of the rocker when an actuating button is operated. The pivotal movement, through the action of spring means, rapidly makes and breaks the contacts and the shifting movement occurs immediately after the contact engagement to provide wiping action for contact clearing. The stationary contacts comprise bifurcated members to provide double point contact, and the combined hammering and wiping action insures the double contact since the contact points are quickly worn to uniform height. The rocker contact is provided with a pin which engages a common pole contact, this contact also providing support for the rocker pin.

3,596,023

PRESSURE SWITCH

Kothe Erich, and William D. Gruhn, Jr., both of Addison, Ill., assignors to Controls Company of America, Melrose Park, Ill.

Filed Aug. 11, 1969, Ser. No. 848,854
Int. Cl. H01h 35/34
U.S. Cl. 200—83 5 Claims



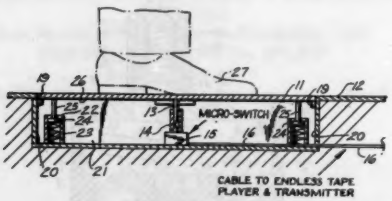
In one modification the diaphragm pad or plate has a post engaging the spring seat which fits loosely in the housing to avoid interference. The spaced shoulders between the spring seat and the post provide the necessary lost motion connection to the switch actuating tongue which fits over and guides the post. In the other modification the post is guided by the tongue which fits in the notches on the post. The spring seat member is eliminated and the spring seats on the post. This design reduces the number of requisite parts and reduces friction impairing repeatability of the performance.

3,596,024

HOLDUP BURGLAR PREVENTION SYSTEM

Floyd Smith, 2261 Ship Yard Road, Chesapeake, Va., and Booker T. Morre, 317 Montclair Ave., Portsmouth, Va.

Filed Jan. 20, 1970, Ser. No. 4,219
Int. Cl. H01h 3/14
U.S. Cl. 200—86.5 3 Claims



A system for thwarting holdups and burglaries, having a plate connected to a switch which when stepped upon or otherwise moved will activate a prerecorded tape player, the tape player sending the name of the business, the number, street and section of the city through a transmitter which will emit a carrier wave through a receiver at a local police headquarters.

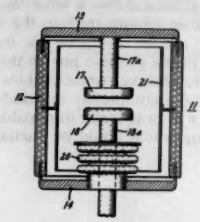
3,596,025

VACUUM-TYPE CIRCUIT INTERRUPTER WITH CONTACTS CONTAINING A REFRACTORY METAL

Joseph L. Talento, Media, Pa., assignor to General Electric Company

Filed Sept. 27, 1968, Ser. No. 763,116
Int. Cl. H01h 33/66
U.S. Cl. 200—144 B 5 Claims

Discloses a vacuum-type circuit interrupter having its contacts formed of a porous refractory metal matrix and an alloy of copper and bismuth filling the pores of the matrix, the percentage of bismuth being less than 2 percent by weight of the copper-bismuth alloy.

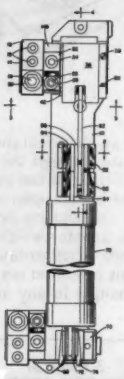


3,596,026

ARC SUPPRESSOR

Tadeusz J. Rys, Lexington, Ky., assignor to Square D Company, Park Ridge, Ill.

Filed May 9, 1969, Ser. No. 823,396
Int. Cl. H01h 33/10
U.S. Cl. 200—144 4 Claims



An arc chute or arc suppressor including a supporting casing in covering relationship with a pair of stationary contact jaws cooperable with an electrical switch blade, cold-molded arc-suppressive material supported in the casing forwardly of the contact jaws, and a plurality of generally U-shaped metal plates supported in spaced relationship forwardly of the contact jaws by the arc-suppressive material, the plate nearest the contact jaws being substantially completely covered on the surface thereof facing the contact jaws by the arc-suppressive material.

3,596,027

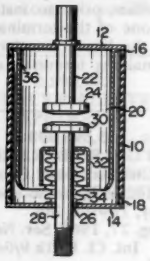
VACUUM CIRCUIT BREAKER CONTACTS CONSISTING ESSENTIALLY OF A COPPER MATRIX AND SOLID SOLUTION PARTICLES OF COPPER-TELLURIUM AND COPPER-SELENIUM

Isao Okutomi, Yokohama-shi; Kazuo Suzuki, Yokohama-shi; Hikohiro Mizutani, Yokohama-shi; Kenichiro Ando, Tokyo; Chiaki Hiruta, Yokohama-shi; Akira Nabae, Tokyo, and Tadahito Tsutsumi, Yokohama-shi, all of, Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed July 24, 1969, Ser. No. 844,275
Claims priority, application Japan, July 30, 1968, 43/53384
Int. Cl. H01h 33/66
U.S. Cl. 200—144 B 2 Claims

A vacuum circuit breaker containing a pair of contact members relatively movable for contact or separation in

which at least one of the contact members is made of an alloy consisting of copper matrix and solid solution particles of a Cu_2Te - Cu_2Se system dispersed in said copper matrix,



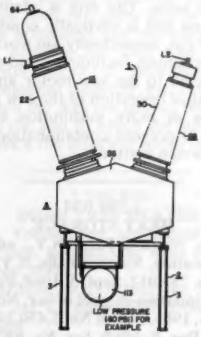
the content of Se ranges between 0.1 and 5.0 percent, and that of Te ranges from 0.1 to 25.9 percent, their total content being 2.5 to 26 percent.

3,596,028

COMPRESSED-GAS CIRCUIT INTERRUPTER HAVING TWO COMPONENT CONTAINING LEGS UPSTANDING FROM A GROUNDED U-SHAPED HIGH PRESSURE TANK

Richard E. Kane, Monroeville, and Frank L. Reese, Pittsburgh, both of, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Dec. 9, 1968, Ser. No. 782,365
Int. Cl. H01h *33/56, 33/74*
U.S. Cl. 200—148 R **12 Claims**



A compressed-gas circuit interrupter has a generally U-shape with interrupting elements, or terminal-bushing structures, disposed in the upstanding legs of the "U," depending upon the rating requirements; and a grounded high-pressure chamber constitutes the lower bend of the U-shaped circuit interrupter. The compressed-gas circuit interrupter is of the dual-pressure type in which the one or more pairs of contacts are separated in a high-pressure gaseous environment, and the high-pressure gas exhausts through one or both of the separable contacts themselves. Downstream blast valves control the continued exhaust of gas through the separable contact structure, and in the fully open-circuit position of the interrupter, the contact space contains high-pressure gas, resulting in reduced separation distance between the separated contacts.

For the lower ratings, a terminal bushing, preferably of the gaseous type, constitutes one of the legs of the "U" and the interrupting elements are disposed along the other leg of the U. For the higher ratings, both legs of the U may comprise one or more serially related interrupting elements to provide, where desired, a number of serially related arc-extinguishing units.

The movable contact structure is preferably actuated pneumatically by a piston structure disposed at the upper end of the arc-extinguishing side of the interrupter, which is controlled by a three-way tripping control valve initiated by an insulating operating rod extending down to ground potential, and mechanically connected to the other phase units of the circuit interrupter, a common valve actuator employed.

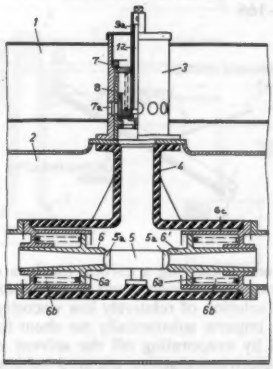
The legs of the U comprise an outer weatherproof insulating shell and an inner insulating tube, which may be under tension, surrounding the serially related arc-extinguishing units. As stated, the inner insulating tube contains high-pressure gas immediately surrounding the separable contact structure, so that high-pressure gas is immediately available at the contacts for the interrupting operation upon their separation.

3,596,029

PRESSURIZED GAS BLAST TYPE ELECTRICAL SWITCH HAVING BLAST VALVE REMOVABLE FOR SERVICING WITHOUT LOSS OF GAS

Dieter Floessel, Fislisbach, Switzerland, assignor to Aktiengesellschaft Brown Boveri & Cie, Baden, Switzerland

Filed July 15, 1969, Ser. No. 841,701
Claims priority, application Switzerland, July 30, 1968, 11527/68
Int. Cl. H01h *33/54*
U.S. Cl. 200—148 R **6 Claims**



An electrical switch of the type which utilizes a pressurized gas such as SF6 working in a closed system for blasting the switch contacts with the gas in order to facilitate extinction of the arc includes high and low pressure gas tanks, the gas being stored in the high pressure tank and being delivered through a gas blast valve to a housing enclosing the switch contacts and which is located in the low-pressure tank. The gas after blasting the switch contacts flows from the switch contact housing into the low pressure tank. To facilitate servicing of the gas blast valve without loss of gas from either the high or low pressure tanks, the interior of the blast valve including the movable parts and seals is made accessible from the exterior of the tanks and provision is made for sealing off the two tanks from the interior of the blast valve.

3,596,030

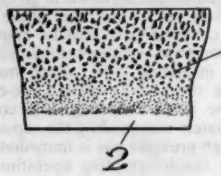
COMPOSITE ELECTRIC ELEMENT OF SILVER-CADMIUM OXIDE ALLOY CONTACT

Akira Shibata, Tokyo, Japan, assignor to Chugai Electric Industrial Co., Ltd., Tokyo, Japan

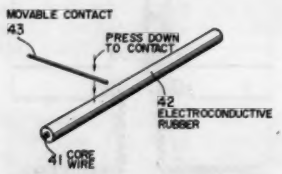
Filed Apr. 14, 1969, Ser. No. 815,677
Int. Cl. H01h *1/02*
U.S. Cl. 200—166 C **3 Claims**

A composite electric contact element is disclosed comprising a contact material formed of an alloy of silver-cadmium oxide, the element having a contact face and an opposite

face composed of a silver layer with cadmium oxide particles distributed in between, such that the concentration of cadmium oxide particles increases from a minimum at the contact face to a maximum towards the face with the silver layer.

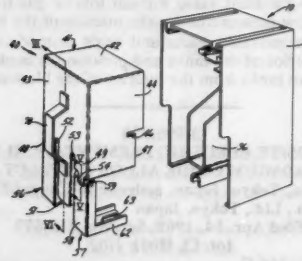


3,596,031
CONTACT MATERIAL FOR ELECTRONIC MUSICAL INSTRUMENTS AND THE METHOD FOR MANUFACTURING THE SAME
Yoshiaki Murakoshi, Hamamatsu-shi, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Shizuoka-Ken, Japan
Continuation-in-part of application Ser. No. 612,253, Jan. 27, 1967, now abandoned , and a continuation-in-part of 612,254, Jan. 27, 1967, now abandoned. This application Aug. 5, 1969, Ser. No. 847,586
Int. Cl. H01h *3/00;* **H01b** *1/06*
U.S. Cl. 200—166 **8 Claims**



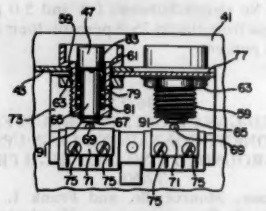
By mixing and dispersing a carbon black, a curing agent, and other compounding ingredients in an uncured rubber in the form of a solution of relatively low viscosity by agitating means which imparts substantially no shear-force to these materials and by evaporating off the solvent of the rubber solution, an electroconductive uncured rubber material of very uniform and reproducibly constant product quality can be produced.

3,596,032
COVER FOR PAD-MOUNT TRANSFORMERS
John W. Roossinck, 7032 Pine Island Drive, Comstock Park, Mich.
Filed Oct. 20, 1969, Ser. No. 867,529
Int. Cl. H01h *9/02*
U.S. Cl. 200—168 A **8 Claims**



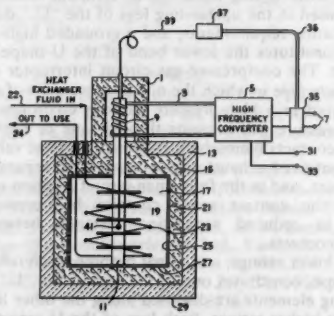
A protective cover particularly adapted for use with a pad-mounted cabinet containing high voltage load-breaking parts of an underground residential or commercial electrical lighting system. The cover is of a nonconductive material and has a stationary flap and a pair of pivotal flaps which, when the cover is positioned within the cabinet, are adapted to cover the electrical terminals. By swinging one of the flaps into an upward position prior to installation of the cover within the cabinet, one of the terminals can be exposed to permit servicing of the line connected to the exposed terminal while the remaining terminals are covered and thus remain energized.

3,596,033
SWITCH DUST GUARD FOR RADIAL ARM SAW
John L. Wickham, Glen Arm, and George W. Cowman, Baltimore, both of, Md., assignors to Black and Decker Manufacturing Company, Towson, Md.
Filed Aug. 27, 1969, Ser. No. 853,289
Int. Cl. H01h *9/04*
U.S. Cl. 200—168 G **11 Claims**



A radial arm saw including a base having an upstanding post supported thereon. An arm extends over a horizontal work table supported upon the base and has a carriage suspended therefrom for movement therealong. A motor-powered saw is fixed to the carriage and is adapted to cut workpieces on the table. The arm is adapted to be pivoted about a vertical axis and is vertically adjustable to vary the angle and depth of cut, respectively, on workpieces on the table. A control mechanism including a movable switchbox is electrically connected to the saw motor and carriage and is constructed to control operation of the saw and carriage. The switchbox has one or more pushbutton switches provided with novel means to prevent contamination thereof by dust, chips, and other foreign matter.

3,596,034
HEAT STORAGE
Matthew Mekjean, Niagara Falls, N.Y., assignor to Hooker Chemical Corporation, Niagara Falls, N.Y.
Division of Ser. No. 757,012, Sept. 3, 1968, Patent No. 3,517,151 which is a continuation-in-part of Ser. No. 589,764, Oct. 26, 1966, Patent No. 3,450,249.
Filed Dec. 8, 1969, Ser. No. 882,389
Int. Cl. H05b *5/02*
U.S. Cl. 219—10.41 **5 Claims**



A method for filling a metallic vessel with a fusible heat storage composition which comprises inductively heating said

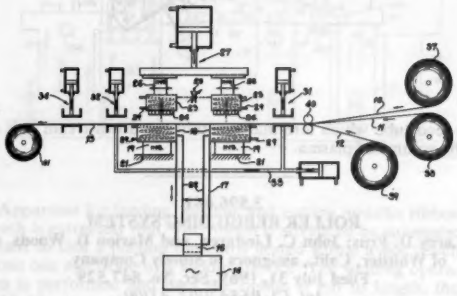
vessel to a substantially uniform desired temperature, introducing said heat storage composition in the desired amount, and cooling the vessel uniformly by proper control of the induction heater to prevent the development of stress between said metal vessel and said heat storage composition which results from the contraction differential between said materials.

3,596,035

HIGH FREQUENCY DIELECTRIC HEATING APPARATUS

Raymond P. Meenen, Hawthorne, N.J., assignor to Mayflower Electronic Devices, Inc., Little Ferry, N.J.

Filed May 13, 1969, Ser. No. 824,076
Int. Cl. B23k *13/02*; H05b *5/00*
U.S. Cl. 219—10.53 8 Claims



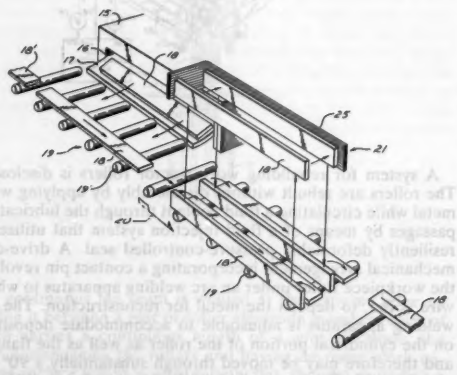
A high frequency heating machine for laminating fabric material in which a heating electrode for each side of the material is divided into two parts and in which each of the four electrodes is preheated, the two electrodes on one side of the material dividing the load and having capacitors therebetween. Mechanism is provided for step-by-step passage of the material between the two opposing sets of electrodes in which the dies are spaced three times the effective width of one die and in which the stroke of the material for each step is twice the effective width of one die.

3,596,036

INDUCTION HEATER

Nicholas V. Ross, Youngstown, and Reuhl E. Jennings, Warren, both of, Ohio, assignors to Ajax Magnethermic Corporation, Warren, Ohio

Filed Mar. 16, 1970, Ser. No. 19,656
Int. Cl. H05b *5/00*, *9/06*
U.S. Cl. 219—10.69 12 Claims



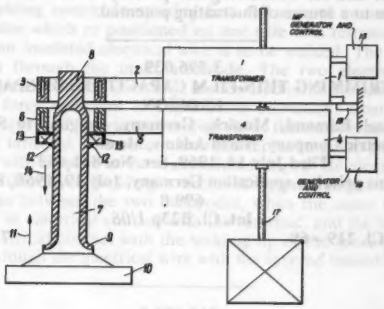
There is disclosed herein an induction heater having an induction coil disposed on a vertical axis and providing a rectangular opening. Means are provided for sequentially inserting a plurality of elongated slabs into the coil adjacent to one side of the coil, each slab being disposed on one side edge in a vertical plane parallel with said one side of the coil, the thickness of the slab being disposed normal to said one side of the coil. Each slab is progressively advanced across the coil in the direction of its thickness to a position adjacent to the side of the coil opposite to said one side, at which position the slab is removed from said coil. Means are provided for applying electrical power to the coil whereby each slab emerges fully and uniformly heated.

3,596,037

APPARATUS FOR INDUCTIVELY HEAT-TREATING STEEL WORKPIECES

Gerhard Seulin, and Friedhelm Reinke, both of Remscheid, Germany, assignors to AEG-Elotherm GmbH, Remscheid-Hasten, Germany

Filed Feb. 12, 1968, Ser. No. 704,892
Claims priority, application Germany, Apr. 29, 1967, A 55597
Int. Cl. H05b *5/00*, *9/02*
U.S. Cl. 219—10.79 3 Claims



Elongate workpieces of varying diameter along their length which are to be inductively heat treated to provide both surface-hardened zones and zones toughened all the way through, have low reverse bending and torsional resistance, due to induced notch effect. It has now been discovered that if the heat treatment is carried out in two stages, one being superimposed on the other, the notch effect is diminished or eliminated.

3,596,038

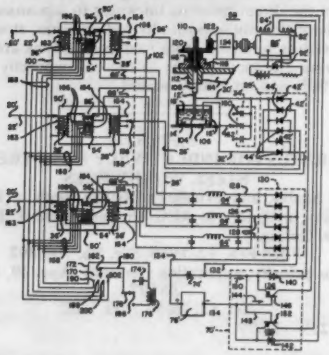
POWER SUPPLY AND AUTOMATIC CONTROL SYSTEM FOR GAP DISCHARGE APPARATUS AND THE LIKE

Terry O. Hockenberry, and Everard M. Williams, both of Pittsburgh, Pa., assignors to Everard M. Williams, Pittsburgh, Pa. and Terry O. Hockenberry, Fox Chapel, Pa., part interest to each

Division of Ser. No. 478,563, Aug. 10, 1965, Patent No. 3,456,087. Filed June 23, 1969, Ser. No. 835,602
Int. Cl. B23p *1/08*
U.S. Cl. 219—69 11 Claims

We disclose a power supply for gap discharge apparatus and the like, said supply comprising energy storing means including a capacitor, circuit means for connecting said capacitor across an electrode tool and workpiece of said apparatus to form a discharge circuit for the capacitor, a rectifying circuit having its output connected across said capacitor to form a charging circuit for the capacitor, transformer means having core structure of the leakage leg type and having primary and secondary windings thereon spaced from said

leakage leg, circuit means for connecting the secondary output of said transformer means to the input of said rectifying

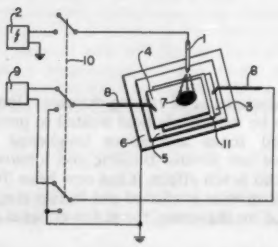


circuit and for connecting the primary of said transformer means to a source of fluctuating potential.

3,596,039
TRIMMING THIN-FILM CAPACITORS BY SPARK EROSION

Michael Edmond, Munich, Germany, assignor to Sprague Electric Company, North Adams, Mass.

Filed July 14, 1969, Ser. No. 841,463
Claims priority, application Germany, July 19, 1968, P 17 64 699.0
Int. Cl. B23p *1/08*
U.S. Cl. 219—69 **7 Claims**



Both electrodes of a thin film capacitor are shorted to ground. A high-voltage pulse is applied to a needle electrode that is separated from the electrodes a sufficient distance to permit formation of a spark which burns away a portion of both electrodes.

3,596,040
HEATING PARTICULATE MATERIAL

Peter Compton MacDonald, Gloucester, and Arthur Leonard Riley, Fairfield, both of, England, assignors to British Titan Products Company Limited, Durham, England

Filed July 10, 1968, Ser. No. 743,675
Claims priority, application Great Britain, July 11, 1967, 31826/67
Int. Cl. H05b *5/00*; B23k *9/04*
U.S. Cl. 219—76 **27 Claims**

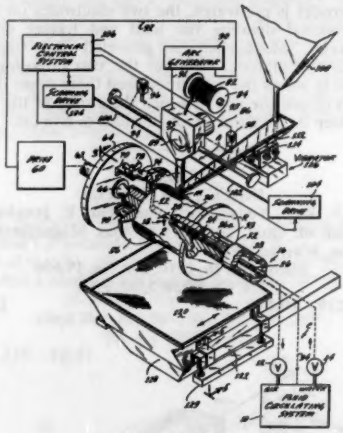
Heating particulate material by means of radiofrequency induced plasma in a stream of gas by introducing the particulate material into the downstream half of the plasma through

a feed tube which terminates within the downstream half of the volume of plasma.

3,596,041
ROLLER REBUILDING SYSTEM

Larry D. Frus; John C. Lindgren, and Marion D. Woods, all of Whittier, Calif., assignors to Stoody Company

Filed July 31, 1969, Ser. No. 847,529
Int. Cl. B65d *9/02*, *43/00*
U.S. Cl. 219—76 **4 Claims**



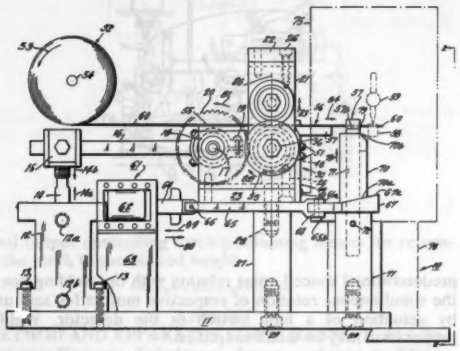
A system for rebuilding worn tractor rollers is disclosed. The rollers are rebuilt without disassembly by applying weld metal while circulating a fluid coolant through the lubricating passages by means of a fluid injection system that utilizes a resiliently deformable pressure-controlled seal. A drive-dog mechanical arrangement incorporating a contact pin revolves the workpiece roller under an arc welding apparatus to which wire is fed, to deposit the metal for reconstruction. The arc welding apparatus is adjustable to accommodate deposition on the cylindrical portion of the roller as well as the flanges, and therefore may be moved through substantially a 90° angle. Granular flux is supplied to the arc, to accomplish submerged-arc welding. The flux is delivered by a vibrating trough and caught by a collector for reuse.

3,596,042

TABBING MACHINE

Jerome Vincent Volk, Union, N.J., assignor to Griffiths Electronics Inc., Linden, N.J.

Filed Apr. 14, 1969, Ser. No. 815,997
Int. Cl. B23k *11/00*
U.S. Cl. 219—80 11 Claims



Apparatus for feeding, welding and cutting metallic ribbon which is extremely thin. The ribbon is advanced by automatic means so that a portion thereof is nested within a slot which forms one electrode of a welding device. The welding operation is performed and then the ribbon is cut to length, the welded parts are then removed and the cycle is repeated. The means for accurately advancing the ribbon comprises a pair of rotatably mounted metallic rollers aligned along a common axis. At least one of the roller assemblies is comprised of first and second concentrically mounted rollers spaced by resilient means. The true centers of the rollers are displaced by a predetermined amount so as to provide constant tension for the feeding operation even in the case where the rollers deviate from true round which may be caused by wearing as a result of continued use.

3,596,043

METHOD OF SEAM WELDING OVERLAPPING WORKPIECES

Anton J. Sporri, Tallapoosa, Ga., assignor to Southern Can Company, Tallapoosa, Ga.

Filed Apr. 11, 1969, Ser. No. 815,446
Int. Cl. B23k *11/06*
U.S. Cl. 219—83 1 Claim

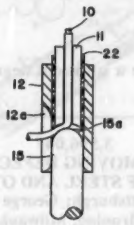
A continuous lap seam is welded at the extreme edge by passing it between a pair of roller electrode members each of which carries a continuous length of a wire electrode, the wire interengaging the rollers and having an outer work engaging surface which is substantially flat, thereby providing a welded seam entirely outwardly of the edge of at least one of the lapping portions.

3,596,044

THROUGH INSULATION WELDING SYSTEM

Leonard Katzin, Los Angeles, Calif., assignor to California Institute of Technology, Pasadena, Calif.

Filed Mar. 3, 1969, Ser. No. 803,812
Int. Cl. B23k *9/28, 11/10*
U.S. Cl. 219—86 11 Claims



A welding system comprising first and second concentric electrodes which re positioned on one side of a terminal, to which an insulated electrical wire is to be welded. The wire extends through the inner electrode. The two electrodes, forming an electrode assembly, are lowered onto the terminal with a force sufficient to rupture the insulation, when the wire is squeezed between a welding tip of the inner electrode and the terminal. The outer electrode serves to guide the assembly with respect to the terminal and to provide electrical contact therewith. Welding is achieved by providing a welding pulse between the two electrodes, when the outer electrode is in electrical contact with the terminal, and the latter is in electrical contact with the welding tip of the inner electrode through the electrical wire with the severed insulation.

3,596,045

MACHINING PROCESS USING RADIANT ENERGY

Karl-Heinz Steigerwald, Lochham; Dieter Konig, Munich, and Joachim Geissler, Vaterstetten, all of, Germany, assignors to K. H. Steigerwald GmbH

Filed Mar. 23, 1966, Ser. No. 536,617
Claims priority, application Germany, Mar. 30, 1965, St 23 592
Int. Cl. B23k *15/00, 27/00*
U.S. Cl. 219—121 EB 6 Claims

A process using a beam of radiant energy, such as electron beams and laser beams, for removing material from a workpiece wherein the workpiece is made of a material which has a low degree of energy absorption for the kind of radiant energy used consists in finely distributing an auxiliary material having a high beam absorbing characteristic within the workpiece material in at least the portion thereof from which material by absorbing heat builds up vapor pressure which carries the adjacent molten material out of the work zone.

3,596,046

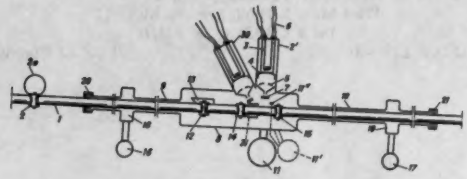
MANUFACTURE OF STEEL TUBES FROM STEEL STRIP BY ELECTRON BOMBARDMENT

Jacques Jean Lucien Valleins, Paris, and Bernard Max Eugene Begue, Pavillon-sous-Bois, both of, France, assignors to Vallourec Usines a Tubes de Lorraine-Escaut et Vallourec Reunies, Paris, France

Filed Jan. 22, 1969, Ser. No. 793,091
Claims priority, application Luxembourg, Jan. 23, 1968, 55,333
Int. Cl. B23k *15/00*
U.S. Cl. 219—121 9 Claims

The invention relates to a process for the manufacture of steel tubes from steel strip by electron bombardment in vacuo. Vacuum is applied to one end of a tube, the other end

being open. The welding operation taking place at the end adjacent the application of vacuum. A sleeve is provided in-



side the tube to ensure a sufficient degree of vacuum at the welding position.

3,596,047

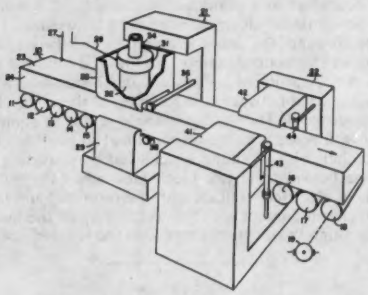
METHOD FOR REMOVING DEFECTS FROM SLABS AND BLOOMS OF STEEL AND OTHER METALS

Daniel A. Maniero, Pittsburgh; George A. Kemeny, Export, Pa., and Armin M. Bruning, Milwaukee, Wis., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Division of Ser. No. 439,832, Mar. 15, 1965, abandoned, which is a continuation of application Ser. No. 817,283, Apr. 15, 1969. Filed Feb. 24, 1969, Ser. No. 801,502

Int. Cl. B23k *9/08*

U.S. Cl. 219—123 **11 Claims**



One or more electric arcs take place from fluid-cooled arcing surfaces at fixed positions along the path of movement of a slab which is to have defects removed therefrom, and magnetic fields generated in the electrodes cause the arcs to move substantially continuously in repetitive paths over the arcing surfaces and over the surfaces of the slab. The repetition rate of movement of the arcs is sufficiently large and the rate of movement of the slab is sufficiently small whereby the arc spot occurs at substantially every point on the slab surface. Additionally, means is provided for quickly cooling successive portions of the surface of the slab after said portions have been heated by the electric arc or arcs. In some embodiments all surfaces of the slab are heated during linear movement of the slab in one direction; in another embodiment, two surfaces of a slab generally rectangular in cross section are heated while the slab moves in one direction, the slab is thereafter turned over and moved back in the opposite direction during which later movement the other two surfaces of the slab are heated.

3,596,048

TRACKLESS AUTOMATIC WELDING MACHINE

Toyoo Maeda, Tokyo-to; Toshio Yada, Yokohama-shi, and Akira Yamaoka, Tokyo-to, all of, Japan, assignors to Ishikawajima-Harima Jukogyo Kabushiki Kaisha, Tokyo-to, Japan

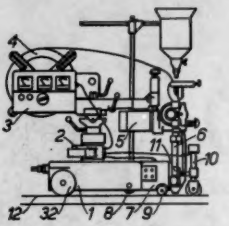
Filed Aug. 22, 1969, Ser. No. 852,228

Claims priority, application Japan, June 14, 1969, 44/47082

Int. Cl. B23k *9/12*

U.S. Cl. 219—125 PL **4 Claims**

An automatic welding machine advanced without the track guide having a sliding unit having a welding nozzle, which is in turn connected to a welding line detector, and an automatic steering unit mounted upon a carriage so that the detector may move along a welding line or groove upon movement of the carriage which in turn is maintained in a



predetermined spaced-apart relation with the welding line by the simultaneous rotation of respective motors for said units by actuation of a limit switch in the detector. Welding preparation may be much simplified.

3,596,049

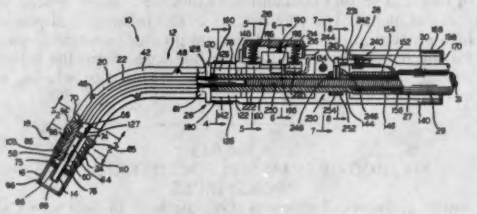
AIR-COOLED WELDING GUN

Ralph Ogden, 1304 Fisher St., Munster, Ind.

Filed July 2, 1969, Ser. No. 838,419

Int. Cl. B23k *9/00*

U.S. Cl. 219—136 **8 Claims**



The disclosure is directed to a welding gun for MIG welding in which the gas cup and contact tip of the nozzle are secured in place by a single-clamp-type device that permits ready replacement of both. The nozzle in turn is connected to the gun handle by a single-clamp device that permits ready replacement of the nozzle as a unit or ready change of positioning of same relative to the handle. The nozzle is arranged to provide for cooling of the gas tip through air fins on the nozzle that are in electrically insulating good heat transfer relation to the gas cup.

3,596,050

AUTOMATIC TORCH HEIGHT CONTROL

George H. Tikijian, South Orange, N.J., assignor to Union Carbide Corporation

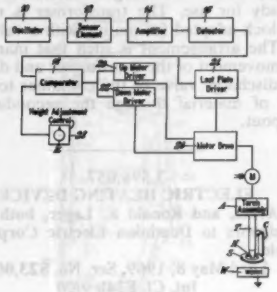
Continuation of application Ser. No. 688,424, Dec. 6, 1967, now abandoned. This application May 5, 1970, Ser. No. 33,153

Int. Cl. B23k *9/10*

U.S. Cl. 219—131 **2 Claims**

The height control apparatus of the present invention automatically maintains a desired spacing between a torch and the surface of a workpiece by detecting variations in capacitance between a plate attached to the torch and the

workpiece, and by comparing the variations with a reference signal which represents the desired spacing, the compared signal output controlling torch-positioning means for returning the torch to the desired height.

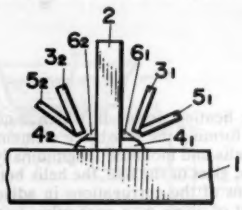


3,596,051

METHOD AND APPARATUS FOR FORMING T-WELDS

Hirokazu Nomura, Yokohama, Japan, assignor to Nippon Koran Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 20, 1970, Ser. No. 21,394
Int. Cl. B23k 9/00
U.S. Cl. 219—137 7 Claims



A method and apparatus for forming a T-weld between a pair of plates, one of which has an edge engaging a surface of the other to form with the surface a pair of elongated corners. Fillet welds are deposited in these corners to form the T-weld connection, and the fillet welds are deposited with a welding apparatus which includes at least one pair of leading electrodes situated at the weld-receiving corners in alignment with each other and one pair of trailing electrodes also situated in alignment with each other respectively at the weld-receiving corners and following the leading pair of electrodes at a given distance. The leading pair of electrodes are supplied with a welding current which is substantially less than, preferably one-half of, the welding current which is supplied to the trailing electrodes. Three-phase alternating current is preferably used for supplying the electrodes, and the current is supplied through a transformer which has the primary windings thereof connected in delta and the secondary windings connected into a star connection, the neutral junction of which is connected with one of the plates. The primary and secondary coils of at least one of the phases of the transformer are divided into a pair of primary and coacting secondary coils, and it is these secondary coils which are connected to the leading pair of electrodes, respectively.

3,596,052

WELDING ROD HOLDER ARRANGEMENT

Richard F. Smith, R.F.D. #1, Carrollton, Va.

Filed July 28, 1969, Ser. No. 845,339
Int. Cl. B23k 9/28
U.S. Cl. 219—138 11 Claims

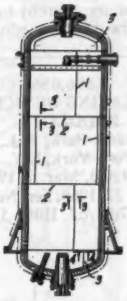
There is disclosed a welding rod holder arrangement including a welding rod receiving member of electrically conductive material and having a welding rod receiving and contacting portion that is externally tapered so as to frictionally receive an electrically conductive loop on the end of a welding electrode or wire. The welding rod receiving member is slotted for air-cooling purposes and a slotted casing means of insulating material surrounds a substantial portion of said welding-rod-receiving member while leaving exposed a sufficient length of said externally tapered offset portion as to provide a large surface area for electrical contact with the electrically conductive loop. There is also disclosed a welding electrode or welding wire having an integrally formed electrically conducting eye or loop at one end thereof that ensures a substantial area of contact with the externally tapered portion of the welding-rod-receiving member.

3,596,053

CONSUMABLE WELDING ROD FOR WELDING CHROMIUM STEELS AND THE RESULTANT WELDS

Isamu Kameda, and Yoshimitsu Uto, both of Hiroshima, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of application Ser. No. 464,816, June 17, 1965, now Patent No. 3,476,989, which is a continuation-in-part of application Ser. No. 211,835, July 23, 1962. This application July 28, 1969, Ser. No. 845,273
Int. Cl. B23k 35/22
U.S. Cl. 219—146 14 Claims

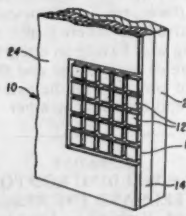


The consumable welding rods contain titanium and niobium in amounts such that a weld formed by melting the rod contains titanium niobium in an amount corresponding to the expression 2Ti+Nb=(6—14)C wherein Ti, Nb and C are the proportion of titanium, niobium and carbon in said weld metal. The proportion of titanium and niobium in the welding rod is determined by estimating the total quantity of carbon in the weld metal, the quantities of carbon, titanium and niobium lost by oxidation during welding and the variations in the quantities of titanium and niobium in the weld metal resulting from the welding process.

3,596,054
WELDING WIRE
Igor Konstantinovich Pokhodnya, Pereulo K Mechnikova, 3, Kv. 21, and Valery Nikolaevich Shlepakov, Ulitsa Pushkinskaya, 45, Kv. 9, both of Kiev, U.S.S.R.
Filed Feb. 18, 1970, Ser. No. 12,464
Claims priority, application U.S.S.R., Mar. 24, 1969, 1313007
Int. Cl. B23k 35/22
U.S. Cl. 219—146 1 Claim

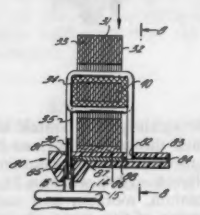
A welding wire, characterized in that its powder core enclosed in a steel sheath, includes (in percent of the core weight) 4—12 percent of alumina and 1—4 percent of sodium fluosilicate.

3,596,055
METHOD AND APPARATUS FOR PRODUCING DISPLAYS UTILIZING AN ELECTRONIC DISPLAY SYSTEM
William A. Elston, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.
Filed May 8, 1969, Ser. No. 823,128
Int. Cl. H05b 1/00
U.S. Cl. 219—216 11 Claims



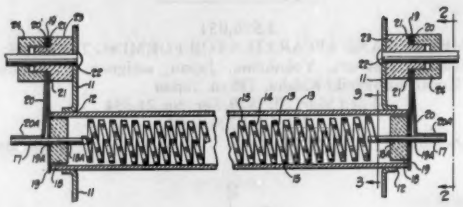
Disclosed herein is a thermal display system including a plurality of very small isolated semiconductor mesas or bodies, each of which contains a heater element so that when the heater element is energized a "hotspot" is formed at the top surface of the mesa to provide a localized dot of heat. By interposing an energy or heat transferable coating, such as carbon paper, for example, between the mesas and a display medium, which preferably is nonsensitized, and selectively energizing certain mesas to form selective hotspots, the heat produced thereby thermally transfers said transferable coating with the display medium, thereby to produce an information representation on the display medium.

3,596,056
ELECTRICAL HEATING DEVICE FOR FLUENT PRODUCTS
Alan Dillarstone, Highland Park, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.
Division of Ser. No. 619,670, Mar. 1, 1967, Pat. No. 3,518,410.
Filed May 22, 1969, Ser. No. 847,756
Int. Cl. B67d 5/62; H05b 5/00, 1/00
U.S. Cl. 219—300 1 Claim



A heating device for rapidly elevating the temperature of a fluent material after the material is discharged from a pressurized container. The heating device comprises a stepdown transformer having a tubular secondary winding for carrying and heating the fluent material. The secondary winding is positioned so that the material discharged from the container flows into the tubular secondary, is heated as it flows therethrough, and is discharged therefrom as a heated product ready for use. The transformer is mounted on a discharge block adapted for mating with a valve stem of the container. The arrangement is such that manually induced downward movement of the transformer and discharge block causes the discharge valve of the container to be opened to cause flow of material through the secondary and out a discharge spout.

3,596,057
ELECTRIC HEATING DEVICE
Robert L. Arntz, and Ronald E. Leger, both of Mansfield, Ohio, assignors to Dominion Electric Corporation, Mansfield, Ohio
Filed May 8, 1969, Ser. No. 823,005
Int. Cl. F24h 9/00
U.S. Cl. 219—354 4 Claims

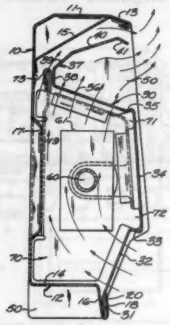


An electric heating device in which a coil of corrugated metal ribbon forming the resistance element of the device is formed in a helix and mounted longitudinally in the bore of a tube of quartz, glass or the like, the helix being so wound that the undulations of the corrugations in adjacent loops of the ribbon are out of phase with each other to prevent telescoping of the adjacent loops. The metal of the resistance element has the characteristics of Kanthol and is an alloy containing iron, chromium, aluminum and tantalum. The metal is coated with an insulating film of oxide formed thereon by the heating of the helix in an oxidizing atmosphere while the corrugated metal ribbon is wound tightly around, and there restrained upon, a mandrel with The adjacent loops separated from each other. The heating in the oxidizing atmosphere leaves the film of insulating oxide film on the metal which electrically insulates adjacent loops from each other although in interengagement upon removal of the helix from the mandrel and the removal of the restraint on the helix. The heating also so anneals the metal ribbon that it resists the tendency to unwind from helix form and remains in the helical form.

3,596,058
BASEBOARD HEATER
Robert E. Steiner, Creve Coeur, Mo., assignor to Emerson Electric Co., St. Louis, Mo.
Filed Nov. 29, 1968, Ser. No. 779,850
Int. Cl. F24h 9/08; H05b 1/00
U.S. Cl. 219—367 5 Claims

A baseboard heater has a laterally narrow elongated finned electric heater positioned in a common airflow passage defined between the front wall and backwall of a baseboard convector housing. The airflow passage extends past the heater from a common air inlet below the heater to a main hot air outlet above the heater. An auxiliary airflow passage is provided, communicating at one end with the common airflow passage behind and above the heater, and opening at its other end above the main hot air outlet and forwardly of the heater. The auxiliary airflow passage is defined between a baffle integral with the front wall and having a forwardly and downwardly directed mouth section and a wall behind the

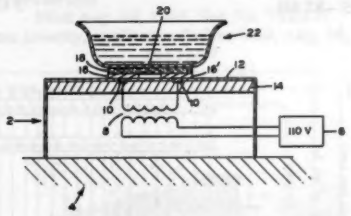
baffle extending in forwardly and upwardly diverging relation to the baffle. A forwardly extending embossment, coextensive in height and length with the heater is provided on the backwall to narrow the main airflow passage.



3,596,059
FOOD CONTAINER HEATING SYSTEM

Nathaniel E. Hager, Jr., Lancaster, Pa., assignor to Armstrong Cork Company, Lancaster, Pa.

Filed Sept. 29, 1969, Ser. No. 861,622
Int. Cl. F27d *11/02*
U.S. Cl. 219—432 **3 Claims**



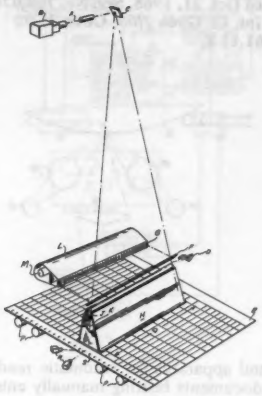
The container-heating system comprises a three part structure consisting of a food container, a heater integral therewith, and a power supply receptacle for the heater. The power supply receptacle may use either a car electrical system or a transformer structure which converts 110 v. to 12 v. The heater is a special high-output heater which is fastened to the base of the food container. The food container with its heater is placed upon the power supply and the heater rapidly heats the food within the container.

3,596,060
OPTICAL SCANNING UNIT FOR MARK SENSING

Edward Camp Tibbals, Jr., and Trevor Temple, both of Boulder, Colo., assignors to Alexander, Inc., Mahwah, N.J.

Filed May 4, 1967, Ser. No. 636,204
Int. Cl. G01n *21/30*; G02b *5/12*; G06k *7/00*
U.S. Cl. 235—61.11 E **2 Claims**

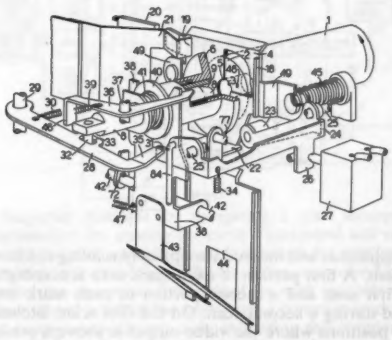
Optical-scanning system for a mark sensing unit wherein a laser beam is deflected through a predetermined arc to traverse a predetermined lineal distance on a record disposed chordally with respect thereto. A beam-splitting device disposed adjacent to the scanned surface directs a portion of the laser beam through an auxiliary clocking grid having a series of apertures sized and spaced in complemental accord with the format of the document being scanned. The varying intensity pattern produced by the passage of the split beam along the clocking grid is converted into a sequence of discrete electrical signals that is readily correlatable with other electrical signals that represent the presence or absence by marks on the scanned document as evidenced by intensity variation induced by the passage of the laser beam therepast to thereby provide a direct and accurate indication of beam location at all times independent of the nature of its displacement.



3,596,061
DEVICE FOR AUTOMATICALLY POSITIONING RECORD SUPPORTS OF THE TICKET OR CARD TYPE IN A READING APPARATUS

Walter Gechele; Arnaldo Pasini; Bruno Piazza, and Francesco Serracchioli, all of Turin, Italy, assignors to Ing. C. Olivetti & C., S.p.A., Ivrea, Turin, Italy

Filed Oct. 14, 1968, Ser. No. 767,405
Claims priority, application Italy, Oct. 31, 1967, 53560-A/67
Int. Cl. G06k *7/08*; G11b *5/00, 25/04*
U.S. Cl. 235—61.11 D **7 Claims**



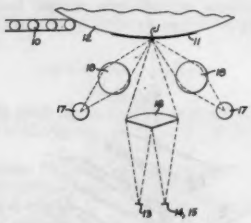
The record member is manually placed in the reading apparatus, after which a centering plunger is inserted into a hole in the record member. The record member, which has concentric rings of magnetic data recorded thereon, is then clamped against a nonmagnetic diaphragm positioned over a rotating reading head. After the reading head has read off the recorded data, the centering plunger is withdrawn and the clamping member released. A trap door beneath the record member opens; and if the member fails to fall by gravity, an ejector crank strikes the record member to remove it from the reading position. The mechanisms are automatically reset at the completion of one reading cycle for the next cycle of operation.

3,596,062

METHOD AND APPARATUS FOR DOCUMENT READING

Leslie John Street, Bristol, and John Francis Cowles, Winterbourne, both of, England, assignors to Parnall & Sons, Limited, Birmingham, England

Filed Oct. 21, 1968, Ser. No. 769,076
Int. Cl. G06k 7/00; G01n 21/30
U.S. Cl. 235—61.11 E 17 Claims



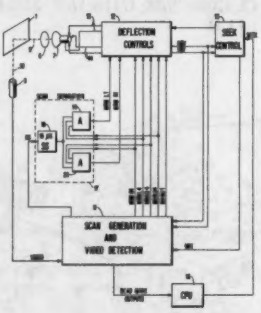
A method and apparatus for automatic reading of single-color printed documents bearing manually entered information in another color wherein transducer means is alternately conditioned in reading the document to provide an output representative of only information in the print color and subsequently or previously another output representative of only information in the other color.

3,596,063

APPARATUS FOR READING MARKS ON DOCUMENTS

Terry W. Curtis; Robert D. Keillor, and Donald L. Mehaffey, all of Rochester, Minn., assignors to International Business Machines Corportaion, Armonk, N.Y.

Filed Jan. 13, 1969, Ser. No. 790,650
Int. Cl. G06k 9/00
U.S. Cl. 235—61.11 F 5 Claims



An apparatus and method for optically reading marks on a document. A first portion of each mark area is scanned during a first scan and a second portion of each mark area is scanned during a second scan. On the first scan, latches are set for positions where the video output is above a predetermined minimum. During the second scan, a second series of latches are set if the video output is above a predetermined minimum and the corresponding first scan latches are set. An output is provided only when the second latches are set.

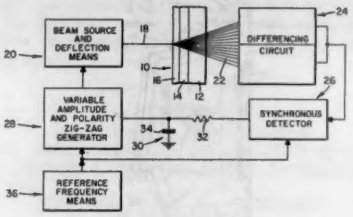
3,596,064

ELECTRONIC LINE SKEW CORRECTOR

Bob V. Markevitch, and David K. Fibush, both of Palo Alto, Calif., assignors to Ampex Corporation, Redwood City, Calif.

Filed Sept. 15, 1969, Ser. No. 857,786
Int. Cl. G06k 7/016
U.S. Cl. 235—61.11 7 Claims

Circuit for obtaining a wide-band line-tracking error signal prior to the dominant time constant of the line-tracking servo. A difference circuit introduces the line-tracking error signal, which includes a skew error signal, to a synchronous detector operating at the beam zigzag rate. The error signal recovered by the detector, is indicative of skew and is used to control a variable amplitude variable polarity zigzag



waveform which is, in turn, applied to the beam deflection system in a direction perpendicular to the tracked lines to thus correct for skew.

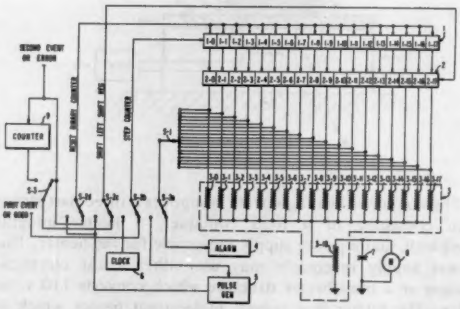
The invention described herein was made in the course of a contract with the United States Department of the Army.

3,596,065

APPARATUS AND METHOD FOR RATE DETECTION,

Nicholas Lazarchick, Jr., Rockville; Alexander H. Frey, Jr., Gaithersburg; Eugene N. Schroeder, Bethesda, all of, Md. assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 7, 1968, Ser. No. 774,145
Int. Cl. H03k 23/02
U.S. Cl. 235—92 SH 5 Claims



A method and apparatus for rate detection of the ratio of first events to second events in a stream of basic events where each event in the stream of basic events must either be a first event or second event. The method provides an indication of the average of the quantized log to the base two of the number of first events that occurs between the occurrence of second events. The apparatus comprises a binary counter, a shift register, a digital to analog converter alarm and metering logic.

3,596,066

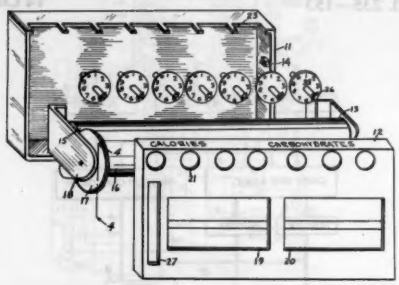
DIET CALCULATING MACHINE

Joseph Spiteri, 142 West 26th St., Erie, Pa., and George D. Baldwin, 1235 Pendergast Ave., Jamestown, N.Y.

Filed June 27, 1969, Ser. No. 837,108
Int. Cl. G06c 27/00
U.S. Cl. 235—114 1 Claim

This specification discloses a dial type device for recording information of the total calories and carbohydrates a person has consumed during a day. The device has a sheet having the caloric and carbohydrate content of various foods printed on it. The sheet is supported on two rollers. The rollers are

connected together through a wheel mechanism made of a knurled wheel which engages two sprockets, one attached to each roller. It has been discovered that while the wheels are, in effect, geared together, the sheet itself may be rolled onto one roller and unrolled from the other and it, and the sheet



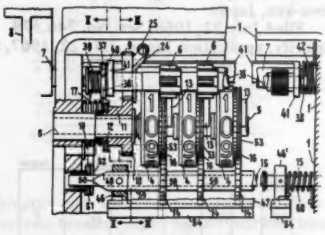
itself, compensates for the greater rate of movement of the paper onto the ruller roll than onto the roll with less sheet on it. A plurality of numbered dials are supported behind windows to record the amount of calories and carbohydrates read from the chart.

3,596,067

COUNTER MECHANISM

Werner Wahli, Bern-Buempliz, and Ernst Hofer, Spiegel near Bern, both of, Switzerland, assignors to W. Wahli A.G., Bern, Switzerland

Filed Aug. 14, 1968, Ser. No. 752,677
Claims priority, application Switzerland, Aug. 16, 1967, 11522/67
Int. Cl. G06c *15/42*
U.S. Cl. 235—144 R **10 Claims**



A counter mechanism which includes a set of side-by-side display counting wheels with cooperating actuating means arranged so they do not assume the position necessary for actuating the counter until the counting wheels have been completely reset.

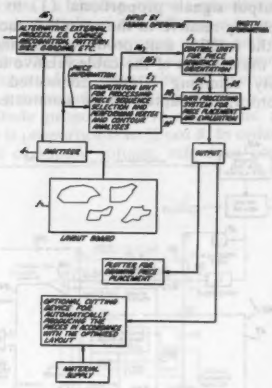
3,596,068

SYSTEM FOR OPTIMIZING MATERIAL UTILIZATION

Harold W. Doyle, Newport Beach, Calif., assignor to California Computer Products, Inc., Anaheim, Calif.

Filed Dec. 30, 1968, Ser. No. 787,929
Int. Cl. G06f *15/00*
U.S. Cl. 235—150 **14 Claims**

Patterns can be automatically arranged on the surface of a material in a manner which will require less material than that which is consumed by a competent human performing the same task. The simulated movement of each pattern piece about an already established marker boundary may be accomplished by data processing techniques. Once the contour of a piece outline and the boundary outline is known and the slopes of the vertex connecting segments determined, the displacing moves of the piece about the boundary may be carried out in a nonoverlapping manner. In such a system it is only necessary to examine the trial marker dimension after



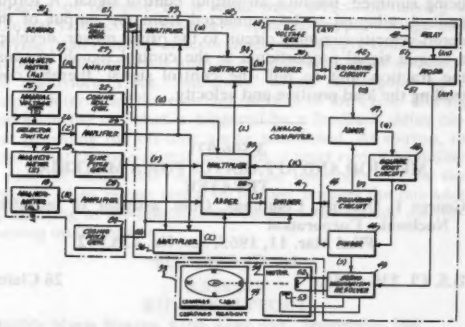
each move in order to ascertain whether the new position is a preferred location.

3,596,069

COMPUTER-STABILIZED MAGNETIC COMPASS

Wayne E. Burt, 2603 Dade Ave., Panama City, Fla.

Filed Feb. 13, 1969, Ser. No. 799,000
Int. Cl. G06f *15/50;* **G06g** *7/78*
U.S. Cl. 235—150.27 **12 Claims**



A magnetic compass for navigating a craft incorporates magnetometers for sensing the earth's horizontal and vertical magnetic flux, roll and pitch accelerometers for continuously sensing the attitude of the craft, an analog computer for compensating the magnetic flux sensed by said magnetometers for the roll and pitch of the craft, and a compass readout for either contiguously or remotely indicating the compensated heading of the craft relative to magnetic north.

3,596,070

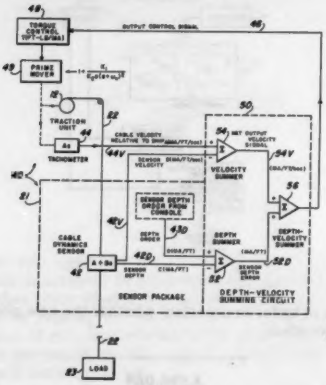
WINCH CONTROL SYSTEM FOR CONSTANT LOAD DEPTH

John M. McCool, Altadena; Shelby F. Sullivan, Arcadia; Robert H. Hearn, Altadena, and Michael S. Ball, Pasadena, all of, Calif., assignors to The United States of America as represented by the Secretary of the Navy

Filed Dec. 8, 1969, Ser. No. 882,984
Int. Cl. G06g *7/78*
U.S. Cl. 235—151 **7 Claims**

A winch control system for operating a winch stationed on a vessel, and for stabilizing a load, which is connected by a cable to a traction unit driven by a prime mover, at a con-

stant height above the sea floor irrespective of the vertical motion of the vessel due to wave action, thereby controlling the motion of the cable. A cable dynamics sensor, connectable to the cable between the traction unit and the load, generates output signals proportional (1) to its depth, and (2) to its velocity relative to the vessel. A tachometer, connectable to the traction unit, produces a signal which is proportional to the velocity of the cable relative to the vessel. A depth-velocity summing circuit, connected to the cable dynamics sensor, is adapted to be connected to a sensor



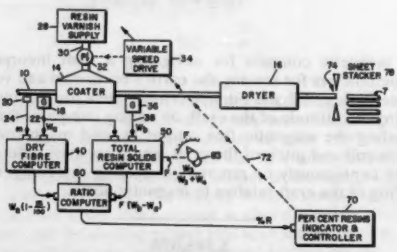
depth order signal, generated by a control console on the vessel, for summing the sensor depth and depth order signals, and is connected to the cable dynamics sensor and tachometer for summing the sensor velocity signal and the cable velocity signal. The two depth and two velocity signals, after being summed, produce an output control signal. A torque control, adapted to be connected from the output of the depth-velocity summing circuit to the prime mover, develops a torque signal proportional to the control signal, to cause the traction unit to null the control signal, thereby controlling the load position and velocity.

3,596,071

METHOD AND APPARATUS FOR A MATERIAL TREATER

George I. Doering, Columbus, Ohio, assignor to Industrial Nucleonics Corporation

Filed Mar. 11, 1965, Ser. No. 438,992
Int. Cl. G06g *7/58*
U.S. Cl. 235—151.1 **26 Claims**



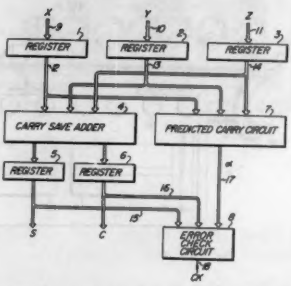
A material-treating process in which the percent weight of coating relative to the measured dry weight of a host material is computed. In application to resin-impregnating process, the percent volatiles in a sheet is computed by measuring the total weight of the dried sheet and computing the ratio of the weight of volatiles in the sheet to the measured total dried sheet weight. Radiation gauges are provided which respond to the weight per unit area of the sheet being measured and a dielectric measuring gauge that responds to the moisture content of the uncoated sheet.

3,596,072

ERROR-DETECTING CIRCUITRY IN ADDER SYSTEM

Shoji Iwamoto, Kokubunji-shi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed May 23, 1969, Ser. No. 827,260
Claims priority, application Japan, May 24, 1968, 43/34742
Int. Cl. G06f *11/10*
U.S. Cl. 235—153 **14 Claims**



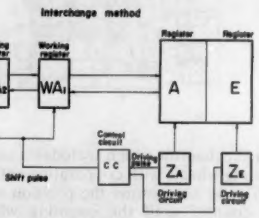
Three signals representing augend and addend are supplied to a carry save adder and a predicted carry circuit which generates a predicted carry signal for each order when corresponding bits of said three signals are coincident. An error check signal is generated by an error check circuit which checks parity of sum and carry signals produced by said carry save adder and said predicted carry signal. By employing the predicted carry circuit, the number of circuit components for the error detection is greatly reduced, and hence the cost of the error detection is reduced correspondingly.

3,596,073

CONTROL SEQUENCE NECESSARY TO IMPLEMENT A GIVEN OPERATION

Akira Yokoyama, and Toshio Imai, both of Kawasaki-shi, Kanagawa-ken, Japan, assignors to The General Corp., Kanagawa-ken, Japan

Filed July 22, 1968, Ser. No. 746,378
Claims priority, application Japan, July 22, 1967, 42-46897
Int. Cl. G06f *7/385*
U.S. Cl. 235—156 **9 Claims**



A control sequence method for implementing an arithmetic operation of some fundamental operations performed by repeating and/or combining some or all of the steps of elementary operations.

3,596,074

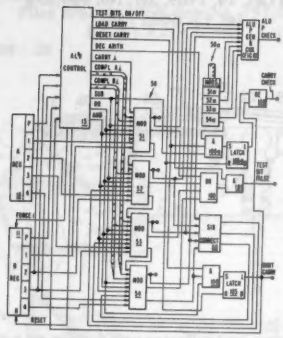
SERIAL BY CHARACTER MULTIFUNCTIONAL MODULAR UNIT

Nicholas S. Mitrofanoff, Rochester, Minn., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed June 12, 1969, Ser. No. 832,684
Int. Cl. G06f *7/50*
U.S. Cl. 235—174 **9 Claims**

An arithmetic and logic unit consisting of a plurality of interconnected logic modules, each module operating as a subtracter in a manner that one operand is base data and the

other is a modifier and controlled to perform the functions of Binary Add and Subtract, Decimal Add and Subtract, Logi-

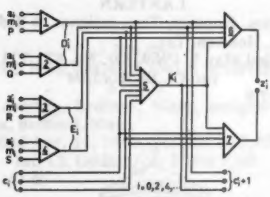


cal AND and OR, Exclusive OR, Set Bits On-Off, Test Bits On-Off, and passing either operand (Move Operand One, Move Operand Two).

3,596,075
BINARY ARITHMETIC UNIT

Jan Leonardus van Weelden, Apeldoornseweg, Beekbergen, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 31, 1968, Ser. No. 733,627
Claims priority, application Netherlands, June 1, 1967, 6707613
Int. Cl. G06f *7/385, 7/38*
U.S. Cl. 235—175 **4 Claims**



An arithmetic unit wherein four input NAND elements each receive two bivalent input signals and one bivalent control signal. An intermediate NAND gate and two output NAND gates operating in conjunction with the input NAND gates combine the bivalent signals to perform 16 arithmetic functions.

3,596,076
CONVERTER CIRCUITRY

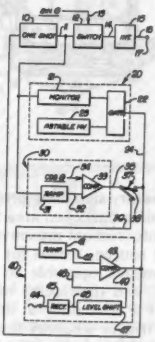
Rhoderick H. Zimmerman, Canoga Park, Calif., assignor to Paul E. Adams and Gary E. Lande, Trustees, Los Angeles, Calif.

Filed Aug. 5, 1968, Ser. No. 750,358
Int. Cl. G06g *7/26, 7/22*
U.S. Cl. 235—197 **9 Claims**

Converter for receiving input signals which are sine and cosine functions of an unknown angle θ, and for producing an output signal X which is virtually linear with θ as the latter varies over a range of 360°, including linearizing circuitry for producing a function signal segment virtually linear with θ over a first function quadrant from −45° to +45°, based upon the relationship

$$X = \frac{\sin \theta}{1+1/2 \cos \theta}$$

and circuitry for substituting trigonometrically equivalent values for the sine and cosine input signals when θ lies outside the first function quadrant and combining circuitry for forming a continuous output signal over a plurality of function quadrants by adding to function signal segments of other function quadrants, a linking signal constituting the appropriate integral multiple of the difference in magnitude of the function signal segment between upper and lower function quadrant limits. The function signal segment for each quadrant is generated by integrating or averaging over a complete cycle a rectangular waveform having a constant on-time, an amplitude proportional to sin θ, and an off-time whose duration is proportional to ½ cos θ. In order to correct for fluctuations of supply voltage, reference compensation

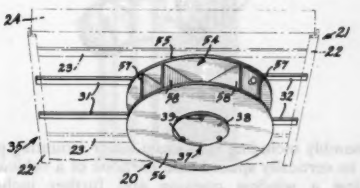


circuitry may be provided including means for increasing the duration of off-time by a small time increment having a nominal value corresponding to nominal supply voltage and varying from nominal in accordance with supply voltage fluctuations. The preferred form of circuitry includes a monostable multivibrator, or "one-shot," whose rectangular wave output determines the constant on-time of the cycle. During operation the one-shot is triggered by a feedback delay circuit providing the off-time above mentioned. At startup, to insure that the one-shot is triggered, a reset circuit including a monitor senses the output of the one-shot and, in the absence of an output signal therefrom, triggers the one-shot by applying to the one-shot the output of an astable or free-running multivibrator.

3,596,077
ROTARY SUPPORT

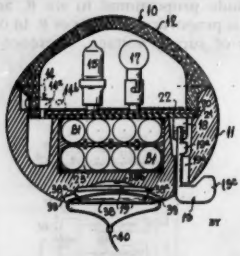
Matilda Marie Miazga, 6106 42nd Ave., Hyattsville, Md.

Filed Oct. 14, 1969, Ser. No. 866,245
Int. Cl. A47c *21/00;* **A47b** *97/00, 46/00*
U.S. Cl. 240—4 **3 Claims**



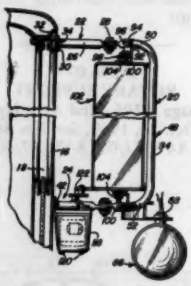
A rotary support or rack for holding and supporting articles in an out of the way position, such as below a bed, the rack including an adjustable means for permitting the device to be mounted below beds of different sizes or types, and wherein there is provided a support member, a hollow hub, and a wheel member.

3,596,078
PROTECTIVE EXPLORATORY PROJECTILE FOR LAW ENFORCEMENT MANEUVERS
John C. Owens, 1611 17th St., Bedford, Ind.
Filed July 9, 1969, Ser. No. 840,239
Int. Cl. F21v 33/00
U.S. Cl. 240—6.4 R 7 Claims



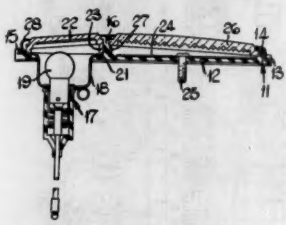
A protective exploratory signalling projectile adapted to be manually thrown within a darkened area from one location to another during law enforcement maneuvers. The projectile is provided with a light source, means for supplying energy to the source, trigger means operable to control the energy supply to the source, and time delay means for postponing the energy supply for a time interval immediately following the operation of the trigger whereby the triggered projectile may be thrown without illuminating the location of the party throwing it.

3,596,079
POWER CONTROL AND BACKUP LIGHT FOR VEHICLE REARVIEW MIRROR
Martin C. Clark, 2321 Drake Place, and Verl T. Dady, 1205 S. Mitchell, both of Casper, Wyo.
Filed Feb. 20, 1969, Ser. No. 801,044
Int. Cl. B60q 1/02
U.S. Cl. 240—7.1 6 Claims



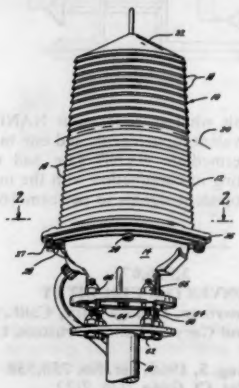
An assembly including upper and lower mounting portions secured to vertically spaced side portions of a vehicle above and below a window opening and further including a generally U-shaped frame consisting of generally parallel upper and lower horizontal legs interconnected at one pair of corresponding ends by means of an upstanding bight portion. The other pair of ends of the legs are oscillatably supported from the mounting portions for oscillation about aligned axes and a light and mirror are supported from the frame and a reversible motor is connected between one of the mounting portions and the frame for oscillating the latter.

3,596,080
COMBINED LAMP AND REFLECTOR UNITS
Ronald Albert Hayward, Solihull, England, assignor to Joseph Lucas Industries Limited, Birmingham, England
Filed Oct. 14, 1969, Ser. No. 866,252
Int. Cl. B60q 1/00
U.S. Cl. 240—7.1 1 Claim



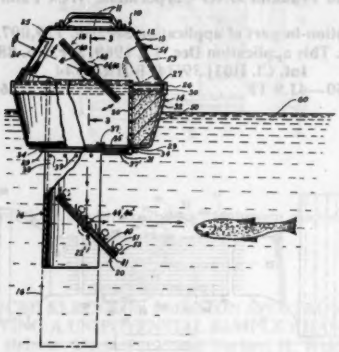
A combined lamp and reflector unit for use on a road vehicle has a resilient member with a base of generally rectangular form and an integral peripheral flange upstanding from the base. The second integral flange upstanding from the base and defines with the first flange a groove extending around the periphery of the base, and there is also a crosspiece integral with the resilient part and defining with the base and the second flange first and second rectangular compartments. In the first compartment is a bulb-supporting unit which extends through the base, and in the first compartment is a lens which is held in position by part of the second flange and the crosspiece. A backing plate is positioned within the second compartment, as is a reflector which is held in position by the remainder of the second flange and the crosspiece. Finally, a decorative bezel is trapped in the groove and obscures the second flange.

3,596,081
APPARATUS FOR LEVELING THE LENS OF A MARINE LANTERN
Peter W. Higgins, Houston, Tex., assignor to Tideland Signal Corporation, Houston, Tex.
Filed May 5, 1969, Ser. No. 821,721
Int. Cl. B63b 45/04
U.S. Cl. 240—7.5 13 Claims



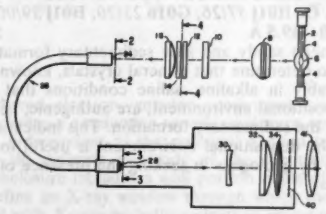
An apparatus for mounting the focal plane of the lens of a marine lantern in a horizontal plane by mounting two spirit levels directly to the lens approximately 90° apart to indicate the levelness of the lens, and providing a leveling adjustment between the lens and the lantern support to adjust and maintain the light from the lens in a horizontal direction. A marine lantern lens adjustment means having at least three threaded bolts connected between the support and the lantern base and two nuts on each bolt adjusting the level of and securing the base to the bolts.

3,596,082
HYDROSCOPE
Raymond Doret, and Michel Doret, both of 65-84 Booth St., Forest Hills, N.Y.
Filed Sept. 6, 1968, Ser. No. 757,830
Int. Cl. F21v 31/00
U.S. Cl. 240—26 3 Claims



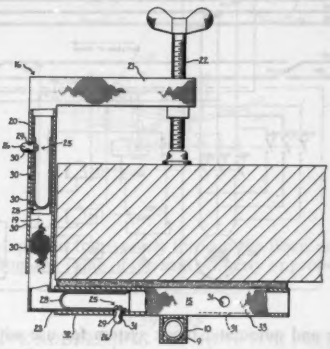
A device for viewing underwater objects, comprising a buoyant housing, a transparent sleeve extending through the housing and a pair of mirrors are adjustable parallel to one another in the top and bottom portions of the sleeve respectively. The bottom portion of the tube and part of the housing are adapted to be immersed in a body of water such as the sea, a river or lake. A slot is provided in the housing for viewing the underwater image shown on the upper mirror. The housing is formed with a chamber for ballast, such as sand, rocks and the like. The lower mirror may also be provided on its periphery with illuminating lights for better viewing.

3,596,083
APPARATUS FOR PRODUCING A UNIFORM LIGHT FIELD
Howard B. Lovering, Bedford, Mass., assignor to G. C. A. Corporation, Bedford, Mass.
Filed Apr. 11, 1969, Ser. No. 815,470
Int. Cl. G02b 5/16; F21m 7/00
U.S. Cl. 240—41 R 6 Claims



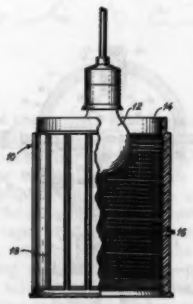
A projector for microreduction photographic apparatus in which light from an arc discharge source is collimated and filtered to pass only wavelengths to which photosensitive material is responsive and then focused upon the entrance face of a fiber optics bundle, the entrance face being contoured to match the configuration of the focused image. The fiber bundle has an exit face circular in cross section and the fibers are randomly dispersed so that fibers in any given area of the entrance face are dispersed throughout the total area of the circular exit face in order to provide a uniform light field, a condenser lens system directs the rays emitted from the exit face of the bundle uniformly upon the entrance pupil of a projection lens; thus the radiation from the nearly rectangular arc discharge is transformed at maximum efficiency into a uniform, collimated, narrow band source for the projection lens.

3,596,084
PORTABLE LIGHT FIXTURE
Donald S. Henning, Thiensville, and William A. Wenman, Wauwatosa, both of, Wis., assignors to Phoenix Products Company, Inc., Milwaukee, Wis.
Filed Apr. 28, 1969, Ser. No. 819,793
Int. Cl. B25b 1/02; F21v 21/08
U.S. Cl. 240—52.1 5 Claims



A light head mounted on a post a distance above a tubular crossbar of square cross section. The crossbar comprises the outer one of a pair of complementary arm forming members that are telescopically connected and together comprise one of the opposite arms of a C-clamp. The inner arm forming member is also of square cross section and it is releasably securable in either end portion of the outer member to dispose the C-clamp with its bight either crosswise or lengthwise of the post, at either side thereof. The bight of the C-clamp also comprises telescopically connected complementary bight forming members that provide for adjustment of the span of the clamp.

3,596,085
LIGHTING FIXTURES
Ernst Eberhardt Hansen, 17, Strandvejen, 6000 Kolding, Denmark
Filed Apr. 16, 1968, Ser. No. 721,758
Claims priority, application Denmark, Apr. 27, 1967, 2245
Int. Cl. F21v 1/00
U.S. Cl. 240—108 1 Claim

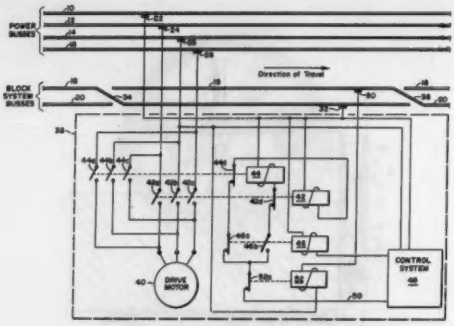


An indirect lighting fixture comprising an injection moulded tubular nontranslucent member having an internal light source at one end and screw threads formed about the interior thereof to reflect light from the source from the insides of the member and towards the light surface, the screw threads being formed during injection moulding of the member by a screw form core which is subsequently unscrewed from the member while the latter is held by the mould.

3,596,086
AUTOMATIC CONVEYOR BLOCK SYSTEM

Guenther Etter, Sissach Ich, Switzerland, and William G. Pestalozzi, Carlisle, Mass., assignors to Sybron Corporation, Rochester, N.Y.

Filed May 5, 1969, Ser. No. 821,760
Int. Cl. B61l *23/16*
U.S. Cl. 246—66 3 Claims

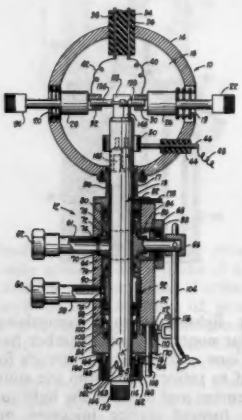


A drive and automatic block system for use with electrically driven conveyors which move along a trackway in a single direction. Power is supplied to the conveyor drive motor through switching means mounted on the conveyor from a plurality of electrical busses mounted beside the trackway, the conveyor having brushes to engage the power busses. Two additional busses are provided beside the trackway. These are divided into electrically insulated sections of a length equal to a block section. A conveyor as it moves along the track supplies a ground signal to the block section which is in the uptrack direction from its present location. Additionally the second block bus in any section is continuously tested for electrical ground and if a ground signal is present, by reason of a conveyor being present in the next downtrack block, the ground signal will operate the conveyor switching means to remove power from the conveyor drive motor.

3,596,087
SPARK SOURCE MASS SPECTROMETERS AND SAMPLE INSERTION PROBE THEREFOR

John Stewart Heath, Sale, England, assignor to Associated Electrical Industries Limited, London, England

Filed Mar. 20, 1967, Ser. No. 624,592
Claims priority, application Great Britain, Mar. 21, 1966, 12,371/66
Int. Cl. H01j *39/34*
U.S. Cl. 250—41.9 35 Claims

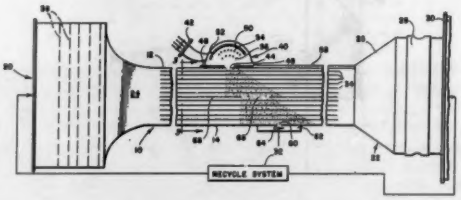


A mass spectrometer with an insertion probe for holding and inserting a sample through a vacuum lock. Means are provided for cleaning the samples.

3,596,088
TIME-OF-FLIGHT MASS SEPARATOR HAVING A FLOWING GAS STREAM PERPENDICULAR TO AN ION DRIFT FIELD FOR INCREASED RESOLUTION

Martin J. Cohen, West Palm Beach; David I. Carroll, Lantana, and Roger F. Wernlund, Lake Worth, all of, Fla., assignors to Franklin GNO Corporation, West Palm Beach, Fla.

Continuation-in-part of application Ser. No. 779,097, Nov. 26, 1968. This application Dec. 17, 1969, Ser. No. 885,664
Int. Cl. H01j *39/34;* B01d *59/44*
U.S. Cl. 250—41.9 TF 26 Claims



Apparatus and methods for sorting and detecting trace gases which undergo ion-molecule reactions. Positive or negative ions of the trace gas are formed by ion-molecule reactions between the molecules of the trace gas and primary ions from a reactant gas. The ions are inserted in a stream of gas while subjected to an electric drift field and follow paths dependent upon their mass, the field strength, and gas flow-velocity. The field strength may be varied to produce successive outputs corresponding to different ion species at a predetermined region of the gas flow duct. Alternatively, simultaneous outputs for different ion species may be provided at different regions of the duct. The apparatus may be calibrated automatically by a feedback loop responsive to a known ion species.

3,596,089
PALEOENVIRONMENTAL DETERMINATION BASED ON MINERAL AUTHIGENESIS

Roger L. Borst, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed Jan. 16, 1970, Ser. No. 3,493
Int. Cl. H01j *37/26;* G01n *23/20;* H01j *39/00*
U.S. Cl. 250—49.5 A 5 Claims

Subterranean sandy and silty sedimentary formations are examined to determine that mineral crystals, known to grow most favorably in alkaline, saline conditions that typify a marine depositional environment, are authigenic, i.e. formed in place, in the sedimentary formation. This indication of the nature of the depositional environment is useful for further exploration by geologists in seeking the presence of petroleum deposits.

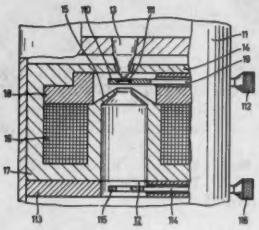
3,596,090
PARTICLE BEAM APPARATUS HAVING AN IMAGING LENS WHICH IS PROVIDED WITH AN ASSOCIATED PHASE-DISPLACING FOIL

Walter Hoppe, Schillerstrasse 46, 8000 Munich 15, Germany

Filed Apr. 4, 1969, Ser. No. 813,629
Claims priority, application Switzerland, Apr. 16, 1968, 5,586/68
Int. Cl. H01i *37/26*
U.S. Cl. 250—49.5 A 18 Claims

A particle beam device has a longitudinal axis and a beam-generating portion for issuing particle beams along the axis. A holder is provided for accommodating a specimen in the path of the beams and a particle beam imaging lens is disposed beyond the specimen locality coaxial with the axis. A foil is disposed in the lens in the path of the particle beams for shifting the respective phases of the latter and scattering

the incident particles of the beams in bunches in distinct directions. The beam particles scattered in at least one of these directions are blocked by a diaphragm disposed beyond the foil.

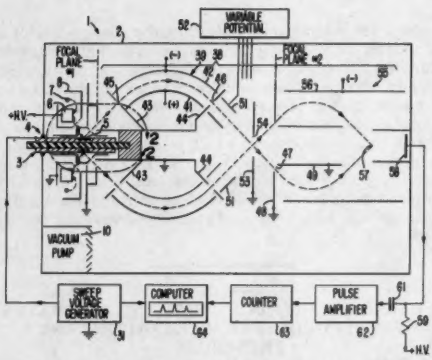


3,596,091

INDUCED ELECTRON EMISSION SPECTROMETER HAVING A UNIPOTENTIAL SAMPLE CHAMBER

John C. Helmer, Menlo Park, and Norbert H. Weichert, Palo Alto, both of, Calif., assignors to Varian Associates, Palo Alto, Calif.

Filed May 19, 1969, Ser. No. 825,680
Int. Cl. H01j 37/26
U.S. Cl. 250—49.5 7 Claims



An induced electron emission spectrometer is disclosed which includes a conductive sample enclosure operable at a potential independent of the potential applied to the spectrometer slit defining electrode of the spectrometer. The sample enclosure includes a wall portion made of a metallic foil to define an X-ray window through which the sample is irradiated with X-rays to induce electron emission from the sample.

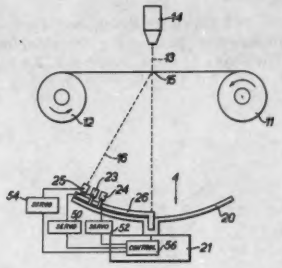
3,596,092

X-RAY DIFFRACTION METHOD FOR DETERMINING THE VALUE OF A MECHANICAL PROPERTY OR PROPERTIES OF A FIBER

John Raymond Marjoram, Derby, England, assignor to Rolls-Royce Limited, Derby, England

Filed May 6, 1969, Ser. No. 822,263
Claims priority, application Great Britain, May 10, 1968, 22299/68
Int. Cl. G01n 23/20
U.S. Cl. 250—51.5 6 Claims

The invention concerns a method of examining a fiber which has crystallites in a preferred orientation to determine the value of a mechanical property or properties of the fiber, the method comprising measuring the diffraction of X-rays which have passed transversely through the fiber, and deducing therefrom the value of the said property or properties.

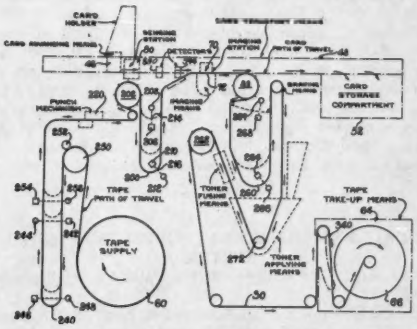


3,596,093

SELECTIVE ADDRESSING MACHINE FOR PREPARING A LIST OF SELECTED ADDRESSES FROM A GROUP OF MASTER CARDS

William D. Boatman, Fridley; Jerome M. Short, Burnsville, Minn., and Elden L. Johnson, Jr., Denver, Colo., assignors to Dymo Industries, Inc., Emeryville, Calif.

Filed Sept. 12, 1968, Ser. No. 759,533
Int. Cl. B30b 15/30
U.S. Cl. 250—65 38 Claims



A machine for preparing a list of selected addresses on an elongate master tape from a group of master cards each carrying a visible address and machine information pertaining to the address, the machine having an imaging station, a mechanism for sequentially advancing each of the group of master cards to the imaging station, a mechanism for advancing the master tape in sequential fixed increments to the imaging station, imaging means at the imaging station, a device for sensing machine information on each advanced master card for selecting at least some of the master cards from the advancing master cards and operating the imaging means only when a selected master card is at the imaging station to establish upon the master tape an image of the address carried by the selected master card. Each selected master card is momentarily halted at the imaging station with the address carried thereby juxtaposed with a stationary increment of the master tape and the master tape is advanced from the imaging station after each operation of the imaging means. Also disclosed is a novel arrangement for the advancement of tape through the machine and a novel arrange-

ment for the advancement and sorting of the cards passing through the machine.

3,596,094
SYSTEM AND METHOD FOR CODING EXPOSED X-RAY FILMS

Leonard Corso, 142 Cowneck Road, and Theodore F. Coles, 28 North Bayless Ave., both of Port Washington, N.Y.

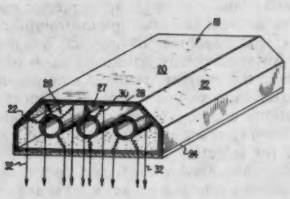
Filed May 7, 1969, Ser. No. 822,654
Int. Cl. G03b *41/16*
U.S. Cl. 250—65 3 Claims

A system and method for providing identifying indicia on exposed X-ray films with there being apparatus for exposing a confined elongated portion of the film to a source of X-ray and providing within the line of sight of this source indicia opaque to X-rays. These indicia are contained on members that are laterally adjustable relative to the confined elongated portion of the film thereby facilitating changing the indicia as desired so as to give the desired identification on the developed negative. After thus exposing this confined portion of the film, the film is removed from this apparatus and this portion is masked from X-rays. The principal X-ray is then taken and thereafter the film is developed to produce a negative that bears the desired subject and the identifying indicia.

3,596,095
OPTICALLY STIMULATED FLUORESCENT LIGHTING SYSTEM

Sam L. Leach, 32653 Seagate Drive, Palos Verdes Peninsula, Calif.

Continuation-in-part of application Ser. No. 738,018, June 18, 1968, now abandoned. This application Dec. 23, 1968, Ser. No. 786,041
Int. Cl. G01n *21/38*
U.S. Cl. 250—71 R 18 Claims

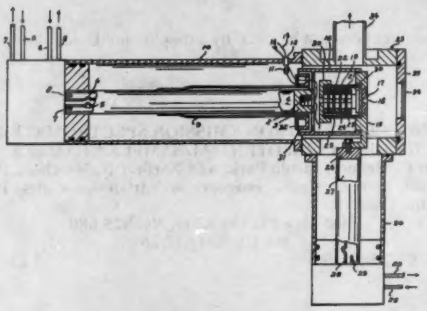


A novel fluorescent lighting system is disclosed wherein gas discharge radiation is utilized to excite luminescence of inorganic solids suspended in a medium of organically activated polymers, physically displaced from the normal relative position with respect to the excitation wave front radiation. A unique blend of gases are utilized within the discharge tube and particular activators are utilized in a novel combination with the phosphor materials such that the luminescent mechanism within the phosphors is optically stimulated thus greatly increasing the efficiency of the light-producing process.

3,596,096
DUAL TEMPERATURE APPARATUS FOR TESTING INFRARED RADIATION DETECTORS

Toivo Koehler, Cambridge, Mass., assignor to The United States of America as represented by the Secretary of the Air Force

Filed Mar. 13, 1970, Ser. No. 19,363
Int. Cl. G01j *5/20*
U.S. Cl. 250—83.3 H 2 Claims

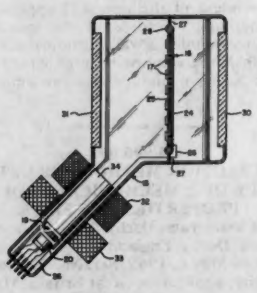


A device for independently adjusting the temperature of an infrared detector and the temperature of a background shield surrounding the detector so that the detector performance characteristics can be correlated with its temperature and the temperature of the background in which it operates. The temperatures are established by two independently adjustable cryogenic tip dewars, one of which is attached to the detector and the other of which is attached to the background shield. The background shield and detector are enclosed in an evacuated container which has an infrared transmitting window through which infrared radiation enters the test apparatus.

3,596,097
INFRARED DETECTION AND IMAGING APPARATUS EMPLOYING QUENCHABLE LUMINESCENT PHOSPHORS

Jean J. Robillard, 46 Ruede Montgeron, 91 Brunoy, France

Filed Mar. 21, 1969, Ser. No. 809,266
Int. Cl. H01j *31/49*
U.S. Cl. 250—83.3 HP 10 Claims



Infrared detection and imaging apparatus are disclosed based on the change in the dielectric constant of an infrared

quenchable luminescent phosphor (and thus the capacity of a capacitive element) when exposed to infrared radiation. A mosaic of capacitive elements located in an image plane is scanned by an electron beam to produce an electrical signal representing an infrared radiation distribution pattern. This change in dielectric constant occurs at significantly lower energy levels than the actual visible quenching level of the phosphor. Local infrared detectors as well as infrared image detection apparatus may be constructed based on changes in capacitance when such phosphor is used as the dielectric material.

3,596,098

INFRARED RADIATOR SOURCE CONTAINING A CHARGE OF PYROTECHNIC INCANDESCENT MATERIAL

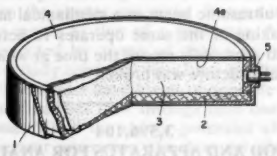
Gunter Stetter, Munich, Germany, assignor to Bolkow Gesellschaft mit beschrankter Haftung, Ottobrunn near Munich, Germany

Continuation of application Ser. No. 570,511, Aug. 5, 1966, now abandoned. This application Aug. 25, 1969, Ser. No. 852,994

Claims priority, application Germany, Aug. 14, 1965, B 83268

Int. Cl. H01j *35/00*

U.S. Cl. 250—85 **9 Claims**



An infrared radiator comprises a light weight container such as a cylinder which is filled with a pyrotechnic material capable of emitting radiation energy immediately after ignition and without noticeable gas development. The cylinder is closed at one end by a metal plate such as a thin steel disc having very little heat capacity of its own and having an exposed surface providing a radiation surface or emitting surface and an opposite surface facing toward the interior of the container which is in direct heat contact with the pyrotechnic radiator.

3,596,099

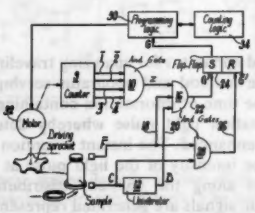
SELECTION OF SAMPLES, PARTICULARLY IN SCINTILLATION COUNTERS

Edward W. Thomas, Rockaway, N.J., assignor to Intertechnique S.A., Plaisir, France

Filed June 4, 1968, Ser. No. 734,426

Int. Cl. G01t *1/20*

U.S. Cl. 250—106 **8 Claims**



A liquid scintillation spectrometer includes an endless conveyor having M successive compartments adapted to receive samples. A sample detector located at the working position is associated with a compartment counter and a counting logic so that a group of samples located in successive compartments is counted only if the first sample of the group is in a compartment numbered $x \cdot N+1$ (where $N=10$ for instance and x is any whole number) and the preceding compartment $x.N$ is empty. All sample groups which do not fulfill that condition are bypassed.

3,596,100

LINEAR OUTPUT TORQUE METER UTILIZING LIGHT SENSING

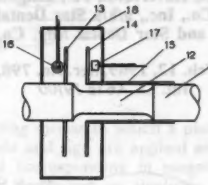
Robert William Hollick, Yeovil, England, assignor to British Hovercraft Corporation Limited, Yeovil, England

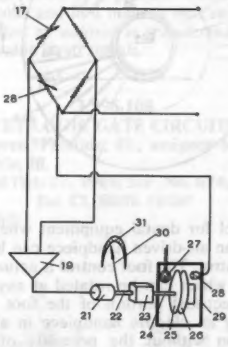
Filed Feb. 19, 1969, Ser. No. 800,583

Claims priority, application Great Britain, Apr. 8, 1968, 16,779/1968

Int. Cl. G01j *1/36*

U.S. Cl. 250—204 **9 Claims**





An apparatus for measuring torque in either a stationary or rotating shaft. Two light-polarizing screens are mounted on a shaft transmitting a torque in such a manner that the twist in the shaft caused by the torque causes a relative rotatory movement between the screens. Light from a light source passes through the screens to a light-sensing device which produces a signal according to the amount of light it receives. The relative rotatory movement of the screens caused by the applied torque causes a variation in the amount of light passing to the light-sensing device so that the signal produced indicates the amount of torque.

The use of light to measure twist means an absence of drag and hence the ability to measure very small torques.

3,596,101

OPTICAL SYSTEMS FOR AUTOMATIC FOCUSING APPARATUS

Atsushi Someya, Tokyo, and Masayuki Miyasaki, Fujisawashi, both of, Japan, assignors to Canon Inc., Tokyo, Japan

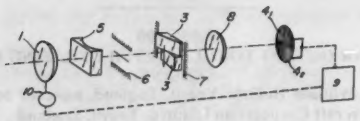
Filed Nov. 5, 1969, Ser. No. 874,229

Int. Cl. G01j *1/36*

U.S. Cl. 250—204 **5 Claims**

Improvement of an apparatus to form an image of an object by an objective lens onto photoelectric element surfaces

and to effect the function of automatic focusing utilizing the difference between the outputs of photoelectric element when the image is in focus and when the image is defocused.

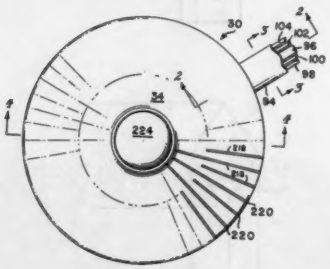


3,596,102

FOOT CONTROL USING ROTATABLE COVER PLATE FOR DENTAL EQUIPMENT

Gregory W. Brooks, Havertown, Pa., assignor to Star Dental Manufacturing Co., Inc., a/k/a Star Dental Manufacturing Company, Inc., and Star Dental Mfg. Co., Inc., Philadelphia, Pa.

Filed Feb. 12, 1969, Ser. No. 798,671
Int. Cl. A61c *19/00*
U.S. Cl. 250—215 **28 Claims**



A foot control for dental equipment wherein an electric handpiece and an air-driven handpiece can be controlled by a single foot control. The foot control is actuated by a rotatable cover plate which can be rotated at any position on its surface. The electrical portion of the foot control can be used for driving an electric handpiece in a forward and a reverse direction without the necessity of moving hand-operated switches. All switching is automatically controlled through the rotation of the dentist's foot. The speed of the electric handpiece is controlled by rotating the cover of the foot control, and the electrical controls have no contacting parts for varying the speed.

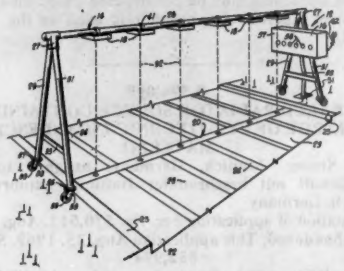
3,596,103

MULTIPLE TIMING APPARATUS FOR TRACK EVENTS AND THE LIKE

Klon E. Matthews, St. John, Kans., and James H. Hood, 713 N. Main, St. John, Kans.

Filed Nov. 18, 1968, Ser. No. 776,402
Int. Cl. A63k *1/00*; G06m *7/00*
U.S. Cl. 250—221 **13 Claims**

This invention is a multiple timing apparatus operable through the use of electronic beams to record individual times of various items such as normally found in track running events. This invention is a multiple timing apparatus including a support frame; amplifier device mounted upon the support frame; a photocell assembly mounted within the supporting surface in cooperating alignment with the amplifier device; a control panel operably connected to the photocell assembly and the amplifier device; and a control panel operably connected to the photocell assembly and the amplifier device to automatically record various points at which the respective photocell beams are broken. Other embodiments of this invention concern the use of mechanical means for breaking a circuit to actuate a stopwatch or the like used in athletic events. Still, more specifically, this invention relates to the use of an electronic source such as a photocell or ultrasonic beam or a mechanical means whereupon the breaking of the same operates to actuate a timing mechanism to accurately record the time at which such beam or mechanical structure was broken.

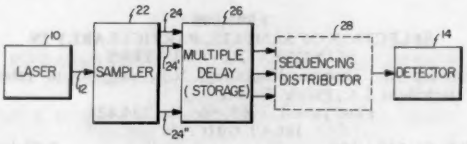


3,596,104

METHOD AND APPARATUS FOR ANALYZING TRAVELING LIGHT WAVES

James Dale Macomber, Baton Rouge, La., assignors to the United States of America as represented by the Secretary of Health, Education, and Welfare

Filed Feb. 10, 1969, Ser. No. 798,078
Int. Cl. G02b *5/14*; H01j *39/12*
U.S. Cl. 250—227 **2 Claims**

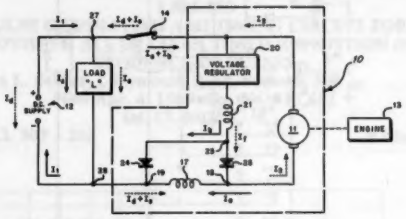


A method and apparatus for analyzing traveling light waves is disclosed, the method and apparatus serving to decrease the effective rise time of information-containing modulations on a short duration light pulse whereby detection of the modulations is enhanced. The instant invention serves to initially sample the intensity of the light pulse at a plurality of different points along the spatially distributed waveform thereof. Separate signals are generated representative of each sampled intensity and each separate signal is stored for a respectively different time duration. The stored signals are then sequentially monitored by an electronic detection device. In effect, then, the instant invention comprises a real-time light sampler utilizing spatial chopping techniques so as to effectively increase the temporal resolution and decrease the effective rise time of modulations on the light pulse such that very rapid (e.g., nonlinear) optical phenomenon can be observed.

3,596,105
CONFIGURATION FOR OPTIMUMIZATION OF STARTER-GENERATOR DESIGN

Joseph D. Segrest, Cherry Hill, N.J., assignor to The United States of America as represented by the Secretary of the Navy

Filed Sept. 23, 1969, Ser. No. 860,286
Int. Cl. H02k 23/52
U.S. Cl. 290—46 10 Claims

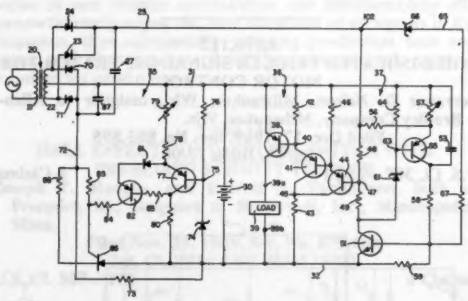


A self-excited compound type DC starter-generator with automatic switching from long shunt excitation to short shunt excitation when the starter-generator changes its operation from that of a motor to that of a generator. A shunt field winding is connected by a pair of diodes to two different junctions on a serially connected armature winding and series field winding. The diodes have biases of opposite polarity applied that permit current flow through only one of the two diodes at a time. When the starter-generator changes from motor to generator operation the bias on the diodes is reversed causing current flow in the opposite diode.

3,596,106
SOLID-STATE EMERGENCY POWER SUPPLY

William J. Raddi, Philadelphia, Pa., assignor to ESB Incorporated

Filed Apr. 16, 1969, Ser. No. 816,620
Int. Cl. H02j 9/00
U.S. Cl. 307—66 14 Claims

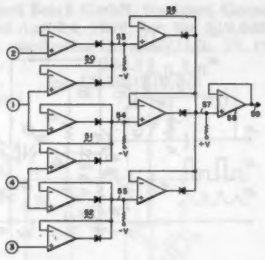


An emergency power supply is described comprising a switch and a low-level dropout circuit. The switch comprises a power transistor which provides power to the load from the battery and is driven by an amplifier. The low-level dropout supply circuit is a complementary bistable multivibrator which turns the switch off in going from a "conductive" state to a "nonconductive" state when the battery voltage drops to a predetermined level. There is also provided a delay-on timer which keeps the emergency lamp on for a selected period of time after external power restoration. In addition, a solid-state charger is provided to maintain a properly charged battery.

3,596,107
SIGNAL SELECTOR

Richard L. Kittrell, Cedar Rapids, Iowa, assignor to Collins Radio Company, Cedar Rapids, Iowa

Filed July 9, 1969, Ser. No. 840,273
Int. Cl. G06g 11/08; H03k 19/30
U.S. Cl. 307—204 11 Claims

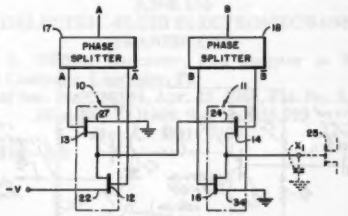


A signal selecting means to which a plurality of signals of variable amplitude and sign are applied and which develops an output signal corresponding in magnitude and sign to preselected ones, depending on algebraic rank, of the midvalue applied signals, exclusive of the most algebraically positive and negative ones of the input signals. The output signal magnitude is controlled by a predetermined permutation of midvalue selections and in a manner that obviates transients on the output line as control is transferred to the various ones of the midvalue input signals.

3,596,108
FET LOGIC GATE CIRCUITS

Richard H. Heeren, Palatine, Ill., assignor to Teletype Corporation, Skokie, Ill.

Filed Oct. 27, 1969, Ser. No. 874,086
Int. Cl. H03k 19/08
U.S. Cl. 307—205 10 Claims



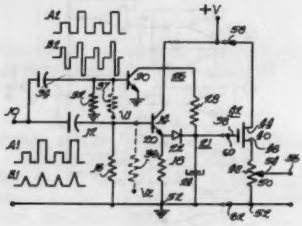
A gate circuit includes field effect transistors interconnected to provide an output signal of a first type whenever all input signals are of predetermined types, and to provide an output of a second type whenever any input signal is other than one of the predetermined types, wherein the only current required by the circuit is that supplied by the output of the circuit to a load which is driven by the circuit. Preferably, the circuit includes a plurality of logic-steering field effect transistors connected with their controlled electrodes in series such that an input signal is connected to an output load device, such as a capacitor, only if all of the logic-steering transistors have been turned ON. A ground return transistor is provided for each logic-steering transistor and operates to provide a ground at the output of the logic-steering transistor if an improper input signal is received. Binary data signals, or inversions thereof, are connected to the gates of the transistors in desired patterns to operate the load device only on a proper combination of input signals.

3,596,109

PEAK DETECTION CIRCUIT

Harry Lee Marshall, Fort Wayne, Ind., assignor to The Magnavox Company, Fort Wayne, Ind.

Filed Feb. 19, 1969, Ser. No. 800,485
Int. Cl. H03k 5/20
U.S. Cl. 307—235 6 Claims



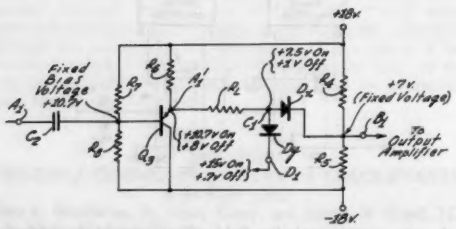
A peak detector circuit having an output proportional to the most recently assumed peak value of an amplitude varying input signal is disclosed. In the described embodiment the circuit includes an input stage, a diode-storage capacitor series combination, a variable impedance path across the capacitor, and an output stage. The impedance of the variable impedance path is controlled by the form of the input signal and is such that when no input signal is applied it has a relatively high value but when an input pulse is applied it has a relatively low value for at least part of the duration of that pulse.

3,596,110

WIDE BAND SWITCHING CROSSPOINT SYSTEM

Robert E. Hinze, Winnipeg, Manitoba, Canada, assignor to Viscount Electronics Limited, Vancouver, British Columbia, Canada

Filed Jan. 6, 1969, Ser. No. 789,253
Int. Cl. H03k 7/00
U.S. Cl. 307—241 2 Claims



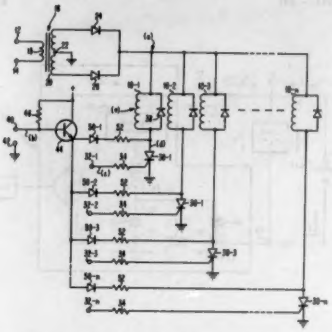
Electronic switching circuitry is provided for particular use in a cross-point switching system and which is capable of switching wide band signals, such as television signals, computer data signals, telemetry signals, and the like, between multiple input and output channels, and of achieving the switching operations with a minimum of crosstalk between the channels, and with maximum signal-to-noise ratio throughout the switching system. Although the switching circuitry of the invention will be described herein in conjunction with such a cross-point switching system, it will be appreciated as the description proceeds, that it has general applications, for switching signals extending, for example, from 0—40 mHz. in frequency, and wherever high signal-to-noise ratio is desired with a minimum of interchannel crosstalk.

3,596,111

SOLENOID ENERGIZING CIRCUITRY

Jerome Danforth Harr, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed June 13, 1969, Ser. No. 833,047
Int. Cl. H03k 17/06, 17/72
U.S. Cl. 307—252 Q 2 Claims



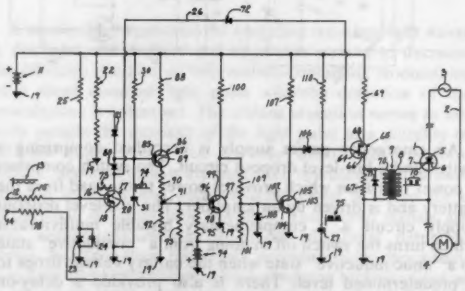
Varying unidirectional voltage energizing circuitry for electric devices, solenoids for example, to be energized selectively with maintained silicon controlled rectifiers (SCR) and the like is embodied with smaller, less expensive, lighter and more reliable than conventional filtered direct current circuit embodiments. Full (or half) wave rectified sine wave voltage is applied across a series connected solenoid and SCR device or a parallel arranged multiple of solenoids and SCR devices connected in series. Conventional electric gating pulses are applied to the gate electrodes of the SCR devices for initiating conduction in the conventional manner. Fall of energizing potential below the voltage level corresponding to minimum holding current is rendered ineffective to extinguish conduction by a transistor and series resistor maintaining a small current flow through the SCR device(s) until the value of energizing potential again rises above the voltage level of minimum holding current. The series resistor defines the maintaining holding current. Diodes are interposed between the combinations of series connected solenoid and SCR devices to isolate them one from another permitting energization of the solenoids at differing times and for differing time periods.

3,596,112

NOISE-ISOLATED TRIGGER SIGNAL GENERATOR FOR MOTOR CONTROL

Terrance D. Nelson, Milwaukee, Wis., assignor to Allen-Bradley Company, Milwaukee, Wis.

Filed Dec. 17, 1969, Ser. No. 885,895
Int. Cl. H03k 17/00
U.S. Cl. 307—252 J 6 Claims



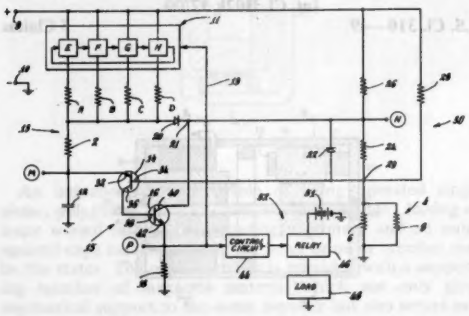
A trigger signal is generated from a DC power supply responsive to a full wave rectified synchronizing signal in

phase with the motor current and a varying DC control signal. The synchronizing signal is fed to a base of an NPN transistor to periodically discharge a storage capacitor. The control signal is fed to a base of another NPN transistor in a transistor switching circuit which is also connected to the storage capacitor, which in one embodiment operates between an oscillator capacitor and the power supply, and which in the other embodiment operates in a shunt path around the oscillator capacitor. A transformer couples the trigger signal from the oscillator.

3,596,113
PULSE GENERATING AND TIMING CIRCUIT FOR PROVIDING ACCURATELY TIMED REPETITION OF SEQUENCE OF PULSES

Robert L. Seidler, 6 Plymouth Road, Summit, N.J.

Filed Apr. 4, 1969, Ser. No. 813,681
Int. Cl. H03k *1/18*
U.S. Cl. 307—265 9 Claims

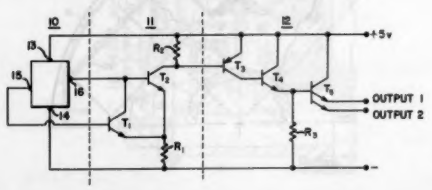


A pulse generating and timing circuit which can be employed in applications requiring reliable, accurately timed, pulses, such as for producing a predetermined signal sequence desirable for use in aids to navigation such as marine signal buoys and beacons and a method of timing same in manufacture, providing stable accurate repetition of the desired signal sequence in spite of changes in ambient conditions over wide ranges. Ratios of the time durations between the respective pulses producing the lengths of the respective signals of the sequence can be accurately predetermined and thereafter the method of adjusting the value of one resistor combination can simultaneously and proportionately adjust the time durations of all signals in the sequence, thus substantially reducing production time and labor and the number of different inventoried resistors required for production.

3,596,114
HALL EFFECT CONTACTLESS SWITCH WITH PREBIASED SCHMITT TRIGGER

Joseph T. Maupin, and Everett A. Vorthmann, both of Freeport, Ill., assignors to Honeywell, Inc., Minneapolis, Minn.

Filed Nov. 25, 1969, Ser. No. 879,684
Int. Cl. H01v *5/00*; H01l *19/00*
U.S. Cl. 307—278 4 Claims

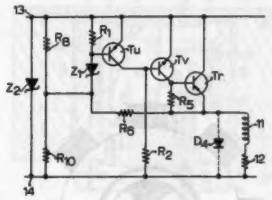


A contactless switch in monolithic semiconductor body wherein a Hall effect element having offset Hall Contacts is integrated with a bistable circuit element of the Schmitt trigger-type, thus providing prebias for the Schmitt trigger. In the preferred form, an amplifier circuit is also included in the same body.

3,596,115
INTEGRATED MONOLITHIC SEMICONDUCTOR VOLTAGE REGULATOR ARRANGEMENT

Gerhard Conzelmann, Leinfelden-Unteraichen, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed Apr. 24, 1969, Ser. No. 819,048
Claims priority, application Germany, Apr. 27, 1968, P 17 64 234.1
Int. Cl. H01l *19/00*
U.S. Cl. 307—303 6 Claims

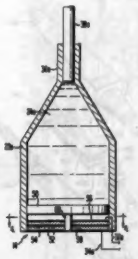


A monolithic semiconductor voltage regulator in which a lightly doped epitaxial layer is grown on a relatively heavily doped substrate. The electrical resistance of the epitaxial layer is high compared to that of the substrate. Power transistors and preamplifying transistors are formed within the monolithic semiconductor chip through isolation diffusion through the epitaxial layers. A first diffusion is then applied to the epitaxial layer within the isolation zone, and a second diffusion is applied within said first diffusion. The power transistor and the auxiliary transistors are structured so that they are complementary transistors. The power transistor may be formed as a substrate transistor and connected in common collector circuit. The doping substance for the substrate has a diffusion coefficient which is substantially lower than the diffusion coefficient of the doping substance used for the epitaxial layer.

3,596,116
PIEZOELECTRIC-FLUID ELECTROMECHANICAL TRANSDUCER

Richard S. Walton, Lancaster, Pa., assignor to Hamilton Watch Company, Lancaster, Pa.

Division of Ser. No. 724,144, Apr. 25, 1968, Pat. No. 3,509,714.
Filed July 23, 1969, Ser. No. 855,793
Int. Cl. H01v *7/00*
U.S. Cl. 310—8.6 1 Claim



The transducer has a fluid chamber mounting a piezoelectric element at one end and a piston slidably mounted in a reduced diameter portion of the chamber opposite the element. A timebase, including a high frequency oscillator and a frequency divider, applies an electrical signal across the

piezoelectric element whereby the element moves to displace the fluid in the chamber thereby driving the piston outwardly against the bias of a spring. The piston is coupled to the gear train of a timepiece. The timed electrical signal is thus converted to an incremental mechanical movement which is amplified by the fluid system to provide timed indexing of the gear train.

3,596,117

LINEAR INDUCTION MHD GENERATOR

Egon Andresen, Darmstadt, Germany, assignor to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt, Germany

Filed Mar. 3, 1970, Ser. No. 16,012
Claims priority, application Germany, Mar. 5, 1969, G 69 09 713
Int. Cl. H02m *4/02*
U.S. Cl. 310—11 1 Claim

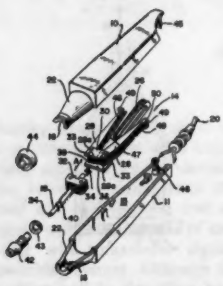
A linear induction MHD generator having an annular flow channel and an inner core formed of a plurality of axially extending iron wires grouped so that the core has a circular cross section.

3,596,118

COIL AND CORE ASSEMBLY FOR AN ELECTRIC TOOL OR THE LIKE

DhuAine J. Davis, Wheaton, Ill., assignor to Hermetic Coil Co. Inc.

Division of Ser. No. 669,870, Sept. 22, 1967, which is a division of application Ser. No. 615,102, Feb. 10, 1967, Pat. No. 3,375,380. Filed Apr. 15, 1970, Ser. No. 28,875
Int. Cl. H02k *33/00*
U.S. Cl. 310—17 5 Claims



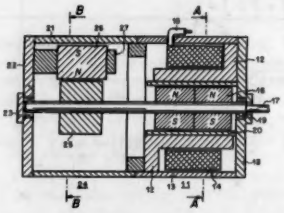
An electric tool in which an elongate casing defines a handle portion for the tool with an interior cavity and an opening at one end leading to the cavity. An elongate electromagnet is mounted in the cavity and an armature is mounted in the casing adjacent the opening for vibratory movement relative to the electromagnet. An etching rod extends through the opening and is secured to the vibrating armature. A spring biased adjusting collar is threaded into the opening and exposed exteriorly of the casing for grasping to adjust the displacement of the etching rod. The core of the electromagnet comprises two pieces with a coil therebetween and hinged at adjacent end for pivotal movement toward and away from the coil. A hinge member for the two piece core guides the armature and also guides the etching rod.

3,596,119

ELECTRIC STEPPING MOTOR

Herbert Goldmann, Zug, Switzerland, assignor to Landis & GYR, Zug, Switzerland

Filed Nov. 13, 1969, Ser. No. 876,267
Claims priority, application Switzerland, Nov. 27, 1968, 17667/68
Int. Cl. H02k *37/00*
U.S. Cl. 310—49 5 Claims



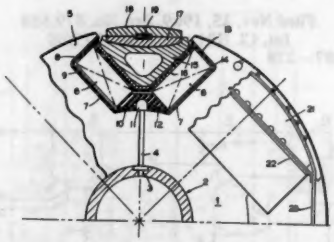
An electric stepping motor having a drive motor for rotating the motor shaft through $0-\pi$ electrical degrees in response to an applied current pulse and an energy storage system connected to the motor shaft for opposing the rotation of the shaft through less than $0-\pi$ electrical degrees and for assisting the rotation of the shaft through greater than $\pi-2\pi$ electrical degrees.

3,596,120

OIL COOLED GENERATOR

Frederick M. Potter, Little Silver, N.J., assignor to The Bendix Corporation

Filed Nov. 10, 1969, Ser. No. 875,236
Int. Cl. H02k *9/19*
U.S. Cl. 310—61 6 Claims



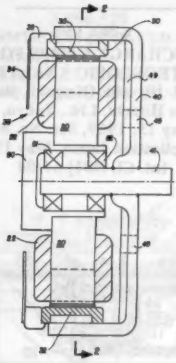
An oil cooled generator which utilizes oil flowing in channels between the pole body and the rotor field windings in intimate contact with the inner edge of the rotor field windings.

3,596,121

ELECTRIC INDUCTION MOTOR

Sheldon S. L. Chang, Setauket, N.Y., assignor to Robbins & Myers, Inc., Springfield, Ohio

Filed Sept. 10, 1969, Ser. No. 856,715
Int. Cl. H02k 17/00
U.S. Cl. 310—166 5 Claims



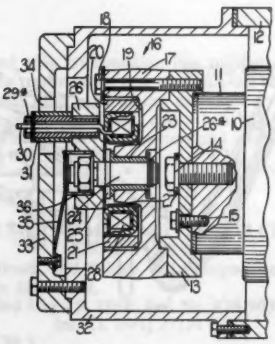
An induction motor capable of being operated single phase, polyphase, capacitor run, shaded pole, etc., having an inner wound member constituting a primary and an outer squirrel cage member. Either the inner or outer member may be the stator. The outer member is provided with a supporting member of magnetic material which not only gives mechanical support to the outer member but also serves as a substantial part of the return magnetic path making it possible to reduce the depths below slot of the outer member drastically, and the eddy current and hysteresis loss of the supporting member add to the induced currents in the squirrel cage to produce additional induction motor torque so that the physical size of the squirrel cage can be substantially reduced.

3,596,122

"INSIDE OUT" DYNAMO ELECTRIC MACHINES

Charles G. Stewart, Solihull, England, assignor to Girling Limited, Birmingham, England

Filed Jan. 31, 1969, Ser. No. 796,316
Claims priority, application Great Britain, Feb. 2, 1968, 5,371
Int. Cl. H02k 7/00
U.S. Cl. 310—67 11 Claims



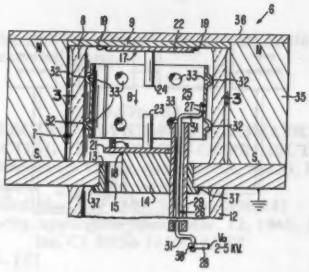
A dynamo electric machine comprising a rotor structure and a stator structure the rotor structure being adapted to be secured to a shaft the speed of which is to be measured, a bearing supported by the rotor structure and the stator structure being carried by said bearing and a pin and slot connection between the stator structure and a fixed member whereby as the shaft rotates relative angular movement will take place between the rotor and stator structure.

3,596,123

ANODE STRUCTURE FOR A MAGNETICALLY CONFINED GLOW DISCHARGE GETTER ION PUMP

Nathan D. Levin, Los Altos Hills, Calif., assignor to Varian Associates, Palo Alto, Calif.

Filed Sept. 18, 1969, Ser. No. 859,004
Int. Cl. H01j 6/17
U.S. Cl. 313—7 7 Claims



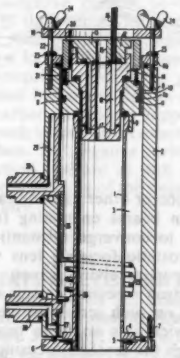
A magnetically confined glow discharge getter ion pump is disclosed. The pump includes a pump housing containing an anode electrode having a glow discharge passageway therethrough and with a pair of cathode electrodes disposed on opposite sides of the anode for establishing the glow discharge. The anode structure is formed by a collapsible coiled sheet metal spring member which is collapsed for insertion into the pump housing through a constricted access passageway and then allowed to expand into place within the housing due to the spring action of the collapsible anode structure.

3,596,124

GAS HEATER FOR THE PRODUCTION OF GASEOUS PLASMA

Denis Cleaver, Thornton-in-Cleveland, and Arthur Leonard Riley, Stockton-on-Tees, both of, England, assignors to British Titan Products Company Limited, Billingham, Teesside, Great Britain

Filed Oct. 16, 1968, Ser. No. 768,081
Claims priority, application Great Britain, Jan. 16, 1968, 2435
Int. Cl. H01j 7/26, 61/28
U.S. Cl. 313—22 8 Claims



Apparatus for the production of a gaseous plasma in a gas stream by means of an oscillatory electric current in which

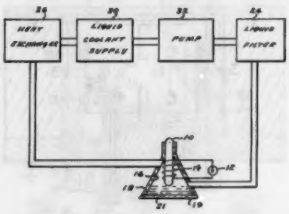
the gas-confining tube is positioned within a sheath and retained within the sheath by means of an annular retaining member secured to the sheath and having helical springs between the retaining member and the end of the tube to permit expansion and contraction of the tube as it is heated or cooled.

3,596,125

LIQUID COOLED RADIATION SOURCE WITH FILTER

Wayne A. Seigel, 603 Hodapp Ave., Dayton, Ohio

Filed June 9, 1969, Ser. No. 831,693
Int. Cl. H01j *5/16, 7/26, 61/40*
U.S. Cl. 313—22 **2 Claims**



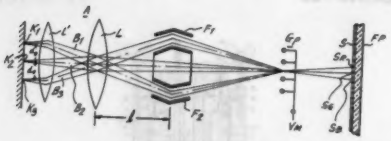
This invention relates to a liquid cooled radiation source wherein a silicon coolant is made to flow through a chamber at least partially enclosing the radiation source to remove the heat produced by the radiation source. A dye is added to the liquid coolant to act as a filter to remove undesired wavelengths of radiation from the beam leaving the radiation source.

3,596,126

CATHODE-RAY TUBE WITH PARALLEL SLIT GRID STRUCTURE ADJACENT COLOR DISPLAY SCREEN

Susumu Yoshida; Akio Ohgoshi, Tokyo; Senri Miyaoka, Kanagawa-ken, and Yoshiharu Katagiri, Tokyo, all of, Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation-in-part of application Ser. No. 697,414, Jan. 12, 1968, now Patent No. 3,448,316, dated June 3, 1969. This application June 2, 1969, Ser. No. 829,295
Int. Cl. H01j *29/56, 29/80, 29/06*
U.S. Cl. 313—86 **2 Claims**



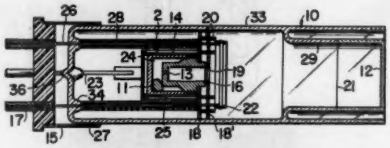
A color picture tube or other cathode-ray tubes in which a plurality of electron beams emanating from one or more cathodes are made to converge substantially at the optical center of an electrostatic focusing lens which focuses the beams on an electron receiving screen. When beams are focused on the electron receiving screen are all to converge at a common point on such screen an electrostatic or magnetic deflection device acts on those beams which diverge after passing through the lenslike focusing system. A grid is positioned adjacent the electron receiving screen of the tube in order to sharply focus the electron beams on the electron receiving screen. The support for the grid structure is stressed to compensate for any expansion of the grid wires due to heating. The support has a pair of opposed parallel arms with the grid wires attached to and extending transversely between the arms and a pair of braces supporting the arms at the bessel point, the braces being stressed in a direction substantially parallel to the direction of the grid wires so that as the grid wires expand due to heat, the braces will expand a corresponding amount to maintain a substantially constant tension on the grid wires.

3,596,127

GLOW DISCHARGE LAMPS FOR USE IN SPECTROSCOPIC ANALYZERS

Kazuo Yasuda, and Hiroshi Okagaki, both of Katsuta-shi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 15, 1969, Ser. No. 824,971
Claims priority, application Japan, May 15, 1968, 32213/68
Int. Cl. H01j *61/04*
U.S. Cl. 313—209 **7 Claims**



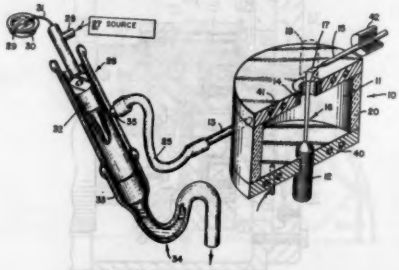
A glow discharge lamp provided with an anode and a cathode which comprises a first cylindrical cup member and a second cylindrical cup member having a smaller outer diameter than that of the first cylindrical cup member and being inserted vaportightly into the first cylindrical cup member with a space therebetween for accommodating a lump of a low-melting-point metal, the hollows of the two cup members are communicated with each other by means of a through hole having a predetermined diameter such that an amount of vapor of the low-melting-point metal may be controlled in the hollow of the second cylindrical cup member, whereby the lump is heated by electron discharge caused between the anode and the cathode and effectively vaporized so that the desirable amount of the vapor flows into the second cylindrical cup member.

3,596,128

EXCITATION SOURCE FOR SPECTROSCOPIC ANALYSIS

William G. Elliott, Lincoln, Mass., assignor to SpectraMetrics, Incorporated, Burlington, Mass.

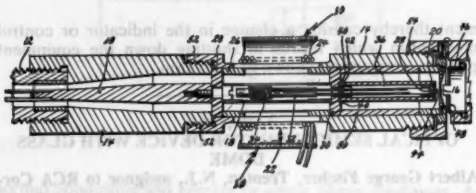
Filed May 1, 1969, Ser. No. 820,788
Int. Cl. H01j *61/88*
U.S. Cl. 313—231 **18 Claims**



A plasma jet generator is composed of a swirl chamber, an anode within the swirl chamber, means for tangentially introducing a premixed atomized sample and an ionizing carri-

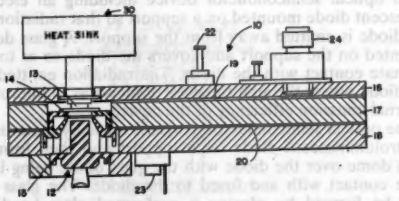
er gas into the chamber, an exit port for the generated plasma flame located opposite the anode, which exit port preferably has an electrically neutral border surrounding the port, and a cathode outside the chamber, offset from the plasma column and located at an angle to the axis of the anode so that the ionized gas is deflected to the cathode permitting spectrometric observation of any portion of the flame without interference from the ionized gas.

3,596,129
COAXIAL TRANSMISSION LINE FED ELECTRON GUN
Ivan Cindrich, Southfield, Mich.
Filed Jan. 28, 1970, Ser. No. 6,634
Int. Cl. H01j *1/02, 23/16, 29/48, 29/96;* **H05b** *41/24*
U.S. Cl. 315—3 **1 Claim**



An electron-gun structure for wide bandwidth applications having a coaxial line input where the center conductor is the cathode heater and is provided with an internal transformer, the outer conductor is used to carry the signal to a modulating grid mounted near the cathode.

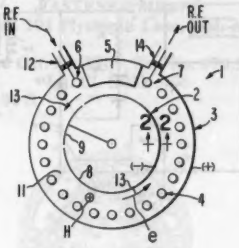
3,596,130
STRIP TRANSMISSION LINE OSCILLATOR
Melvin D. Clark, Box 11602, Albuquerque, N. Mex.
Filed Dec. 23, 1968, Ser. No. 786,335
Int. Cl. H01j *7/46, 17/80*
U.S. Cl. 315—39 **7 Claims**



An improved strip transmission line oscillator, having an adjustable plate transmission line to match the characteristics of the particular tube used in the oscillator to achieve optimum output of the oscillator, and a heat sink attached to the anode of the oscillator, and a new and improved method for assembling the oscillator.

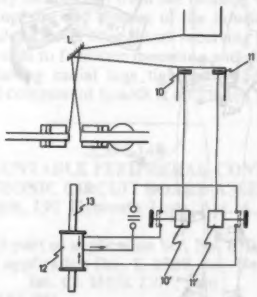
3,596,131
CATHODE SECONDARY EMITTER FOR CROSSED-FIELD TUBES
Andrew S. Wilczek, Old Bridge, N.J., assignor to Varian Associates, Palo Alto, Calif.
Filed May 29, 1969, Ser. No. 828,903
Int. Cl. H01j *25/34*
U.S. Cl. 315—39.3 **5 Claims**

In a crossed-field tube of the type employing a cathode secondary emitter, the secondary emission surface is corrugated with the corrugations being elongated generally in the direction of the secondary electron stream to increase the effective secondary electron emissive surface area of the cathode and to increase the secondary electron emission



yield from the surface, whereby the current loading on the cathode is decreased in use.

3,596,132
PHOTOELECTRIC DEVICE FOR AUTOMATICALLY CORRECTING THE CARBONS OF PROJECTORS
Jose Tomas Barrientos Luque, San Marcos, No.23, Priego De Cordoba, Spain
Filed Mar. 11, 1969, Ser. No. 806,241
Claims priority, application Spain, Mar. 12, 1968, 136,950
Int. Cl. H05b *31/18, 41/38*
U.S. Cl. 315—151 **6 Claims**

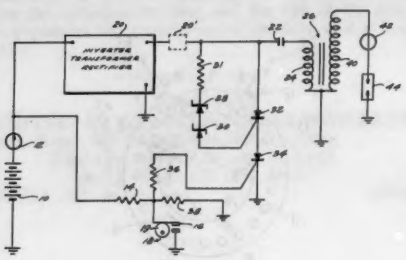


Photoelectric device for the automatic correction of the lamp carbons of projectors. A lamp has two photoelectric cells and an appropriately diaphragmed lens located laterally of the lamp in front of the arc of light and spaced so as not to be damaged by the heat. The amplified image from the carbons is projected onto the two photoelectric cells which are sensitive to the light of the arc. Two photoelectric relays are provided acting independently, one for the positive carbon and one for the negative carbon, so that they send the respective effects of their sensitivity to each one of the two photoelectric cells. An electromagnet having a solenoid is activated by the relays located in the advancing speed variator of the carbons, comprising means for correcting the malformed crater caused by combustion in the positive carbon and the negative carbon. A guiding support for the negative carbon maintains such carbon in an exact position in relation to the positive carbon. The negative carbon carrier is slightly movable in its vertical position as well as in its horizontal position, so that the advancing of the negative carbon may be done without difficulty.

3,596,133
SOLID-STATE MULTISPARK IGNITION
Glenn B. Warren, 1361 Myron St., Schenectady, N.Y., and William R. Scholtz, 207 Wyman St., Scotia, N.Y.
Filed Sept. 30, 1969, Ser. No. 862,167
Int. Cl. H05b *37/02, 41/36*
U.S. Cl. 315—209 SC **1 Claim**

A solid-state circuit providing a succession of similar short voltage rise time sparks for automotive engine ignition pur-

poses during the period the timing breaker of the ignition system is open to replace the single spark per ignition of conventional automotive ignition systems.



3,596,134
APPARATUS FOR DISCHARGING ELECTROSTATIC ENERGY

Frederick D. Burke, 1612 Morton St., Alameda, Calif.

Filed Oct. 8, 1968, Ser. No. 775,984
Int. Cl. A61m *1/14*; **H05f** *3/00*; **A41d** *19/00*
U.S. Cl. 317—2 B **9 Claims**

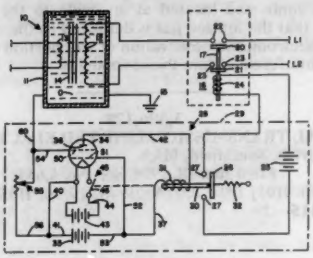
An apparatus adapted to be worn by persons working in an electrostatic field for eliminating the discomfort and ill effects of discharges of electrical energy through the person. It comprises one or more bands in the form of wearable garters or a belt, each having a flexible conductive element that will conform to the body shape and thus lie close to the skin so that electrical discharges will occur a relatively large body area rather than at a small area or point contact thereon. The garters and belt are each connected by flexible leads to conductor devices for contacting grounded structures, such as foot sandals, gloves or bonding devices at the ends of the leads.

3,596,135
METHOD AND APPARATUS FOR DETECTION OF BREAKDOWN OF INSULATION IN ELECTRICAL EQUIPMENT

Andrew Stenger, Jr., and James S. Hall, both of St. Petersburg, Fla.

Continuation-in-part of application Ser. No. 290,124, June 24, 1963, now Patent No. 3,296,494. This application Nov. 7, 1966, Ser. No. 592,452
Int. Cl. H02h *7/16, 7/26*
U.S. Cl. 317—14 **11 Claims**

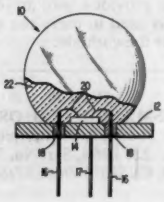
An electromagnetic sensing device is adapted to respond to electromagnetic signals generated in electrical equipment such as transformers, and to amplify the signals for actuating an indicator or control mechanism, the signals change because of incipient breakdowns in insulation in the equipment thereby causing a change in the indicator or control mechanism which results in shutting down the equipment prior to a major breakdown of insulation.



3,596,136
OPTICAL SEMICONDUCTOR DEVICE WITH GLASS DOME

Albert George Fischer, Trenton, N.J., assignor to RCA Corporation

Filed May 13, 1969, Ser. No. 824,146
Int. Cl. H01l *3/00, 5/00*
U.S. Cl. 317—234 R **6 Claims**



An optical semiconductor device including an electroluminescent diode mounted on a support so that radiation from the diode is emitted away from the support. A glass dome is mounted on the support and covers the diode so as to be in intimate contact with the diode. The radiation emitted from the diode passes through the glass dome so as to improve the external emission efficiency of the device.

The optical semiconductor device is made by mounting the electroluminescent diode on a support and then forming a glass dome over the diode with the glass dome being in intimate contact with and fused to the diode. The glass dome may be formed by placing a preformed glass bead on a heated diode and support subassembly, or by melting a glass in a mold cavity and placing the diode and support subassembly onto the soft glass while in the mold.

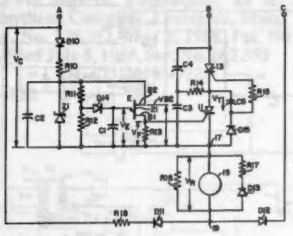
3,596,137
POLYPHASE CONTROL DEVICE

Andrew F. Kirsch, Edison, N.J., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 4, 1969, Ser. No. 830,464
Int. Cl. H02h *3/26*
U.S. Cl. 317—47 **4 Claims**

A reverse phase and single phase detecting device utilizes a silicon controlled rectifier connected with its main current path between at least two of the phases of the polyphase source to be monitored. The control electrode of the SCR receives its energization from a firing circuit connected to a third phase of the polyphase source. Under normal operating conditions the firing signal is delivered early enough in the interval when the SCR is forward biased that sufficient current is passed through the current path to operate a translating device. Under reverse phase or single phase conditions

the SCR does not fire until late in the interval when the SCR is forward biased or it does not fire at all so that the detector is not activated. Preferably the firing circuit comprises a pulse generator adjusted to deliver a triggering pulse through the control electrode of the SCR at an instant which provides a greater separation in the response of the device between



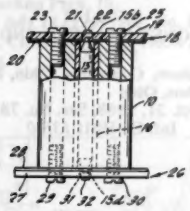
normal conditions and reverse or single phase conditions. A second SCR can be placed in series with the first with its control electrode receiving its firing signal from a sample and hold circuit connected across the primary SCR so that the translating device will not be operated should the primary SCR fail as a short circuit.

3,596,138

INTERBOARD FEED-THRU FOR JOINING PRINTED AND INTEGRATED CIRCUITS

Sanford S. Lehrfeld, Heightstown, N.J., assignor to Tek-Wave, Inc., Princeton, N.J.

Filed Aug. 25, 1969, Ser. No. 852,752
Int. Cl. H05k *1/04*
U.S. Cl. 317—101 **10 Claims**



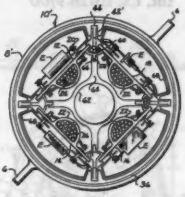
A feed-thru device making it possible to stack integrated circuits and/or printed circuit boards in closely spaced parallel fashion and providing means for joining components and/or terminals from one adjacent board to the next. The feed-thru is comprised of a solid conductive body for threadedly engaging suitable mounting hardware to rigidly join adjacent boards in closely spaced parallel fashion. The conductive body further acts as part of a coaxial circuit in conjunction with a center conductor electrically isolated from he conductive body by a suitable insulating sleeve, which center conductor further functions as a pin or terminal for connection with the printed circuit terminal element at both ends of the center conductor or pin. The configuration of the pin provides excellent impedance matching between each printed circuit through the coaxial configuration. The mounting hardware is so arranged as to provide excellent mode suppression at microwave frequencies.

3,596,139

IMPROVED ELECTRONIC COMPONENT ASSEMBLY CYLINDRICAL SHELL HOUSING WITH INNER PERIPHERAL RADIATING FIN CIRCUIT BOARD FASTENER MEANS

Ronald A. Walsh, 191 Plymouth Lane, Apt. A., Glen Burnie, Md.

Filed Oct. 22, 1969, Ser. No. 870,518
Int. Cl. H05k *5/06*
U.S. Cl. 317—101 R **10 Claims**



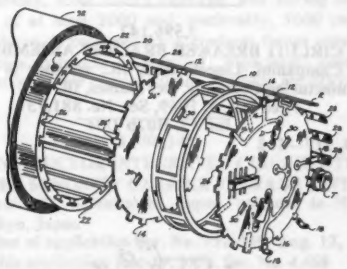
Demountable assembly and packaging means and method securing rectangular circuit boards in axially symmetrical tubular configuration in a cylindrical housing without the use of conventional attachment hardware, are described, including longitudinal grooves inside the housing with mountings fixed radially inwardly from the grooves, the inner ends of the mountings protruding between and receiving the edges of adjacent component boards, and the component boards and mountings having integral lay-in wireways permitting unfolding the assembly on removal from the housing without necessity for unwiring; the end closure of the housing is provided with inwardly detachable connectors receiving leads from the component boards to facilitate mounting and demounting; an axial spider having radial legs tightening the assembly of mountings and component boards is optionally provided.

3,596,140

DEMOUNTABLE PERIPHERAL-CONTACT ELECTRONIC CIRCUIT BOARD ASSEMBLY

Ronald A. Walsh, 191 Plymouth Lane, Apt. A, Glen Burnie, Md.

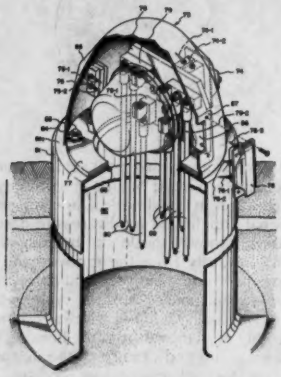
Continuation-in-part of application Ser. No. 870,518, Oct. 22, 1969. This application Dec. 1, 1969, Ser. No. 881,122
Int. Cl. H05k *1/07, 5/06*
U.S. Cl. 317—101 DH **8 Claims**



A demountable peripheral-contact electronic circuit-board assembly including an electrically insulative tubular housing having slots in the inner wall parallel to the housing, the housing accommodating an aligned array of parallel-spaced substantially disc-shaped circuit boards having contacts protruding into the slots in the housing, and removable conductive rails in the housing slots for interconnecting the circuit boards through the protruding contacts. The conductive rails are provided selectively with insulated areas to isolate particular circuit-board contacts where required. An exterior hermetic enclosure protects and cushions the assembly and provides for exterior electrical connection through an interi-

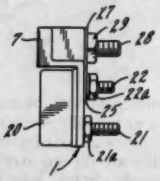
or manifold type terminator in contact with the conductive rails.

3,596,141
ELECTRICAL METER BOX
Richard Sterling Jones, 3922 South 775 West, Bountiful, Utah, and George Michael Stevenson, 2080 West 5900 South, Roy, Utah
Continuation-in-part of application Ser. No. D 13,109, Aug. 12, 1968. This application Oct. 28, 1969, Ser. No. 770,915
Int. Cl. H02b 9/00
U.S. Cl. 317—107 6 Claims



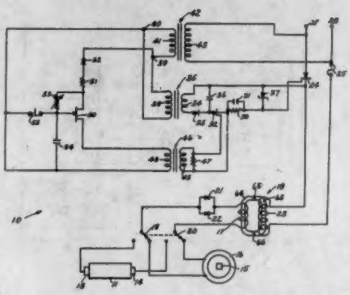
An electrical meter box for the outdoor installation of a kilowatt hour meter is constructed with a housing having a portion of domelike configuration with an open bottom, a mounting ring over which the housing portion closely fits for stability, and an upstanding meter-receiving panel rigidly carried by the mounting ring. A pullbox section may be provided as part of the meter box, as also may a lamp post portion rising upwardly from the domelike portion and adapted to carry a luminaire for outdoor lighting. The panel is provided with bus bar mountings for electrical and meter-plug-in connections. The housing is preferably hingedly attached to the mounting ring for free-swinging covering and uncovering movement relative to the meter-mounting panel.

3,596,142
CIRCUIT BREAKER BRACKET ASSEMBLY
Sergio Campanini, Lincolnwood, Ill., assignor to The Berg Manufacturing Company, Des Plaines, Ill.
Filed Dec. 3, 1969, Ser. No. 881,731
Int. Cl. H02b 1/04
U.S. Cl. 317—112 4 Claims



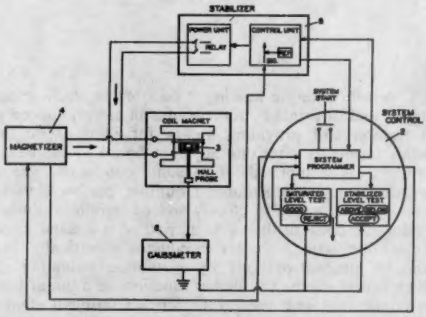
An elongated bracket, Z-shaped in cross section, a plurality of parallel, open-ended slots for reception of breaker terminals and mounting of breakers, bracket-mounting apertures and bus bar terminal and mounting apertures, circuit breakers and bus bars.

3,596,143
MAGNETIC PARTICLE INSPECTION APPARATUS
Ralph W. Gruetzmacher, River Grove, and Kenneth W. Schroeder, Arlington Heights, both of, Ill., assignors to Magnaflux Corporation, Chicago, Ill.
Filed Apr. 3, 1968, Ser. No. 718,437
Int. Cl. G01r 33/12
U.S. Cl. 317—123 13 Claims



Magnetic particle inspection apparatus in which a coil around a part or contacts engaged with a part are connected through one or more silicon diodes to the secondary of a stepdown transformer the primary of which is connected through a silicon controlled rectifier to an AC source, a control signal being applied to the gate of the silicon controlled rectifier, preferably through a second silicon controlled rectifier controlled by a unijunction transistor oscillator the timing of which is controlled to control magnetizing current. The diodes and the rectifier conduct during the same half cycles of the alternating current and magnetizing current is always discontinued at the end of a half-cycle of one polarity of the alternating current with a consistent steep wave shape such that the remnant magnetization from one part to another is uniform and the degree of concentration of particles over a defect provides an accurate indication of the character of the defect. Another important feature is in the provision of means to prevent saturation of the transformer core, preferably by providing an air gap therein.

3,596,144
AUTOMATIC MAGNET CHARGER AND CALIBRATION SYSTEM
George J. Cunningham, Columbus, Ohio, assignor to F. W. Bell, Inc., Columbus, Ohio
Filed Oct. 31, 1968, Ser. No. 782,504
Int. Cl. H01f 13/00
U.S. Cl. 317—123 13 Claims



The invention is for an automatic magnet charger and calibration system utilizing a magnet charger to saturate the

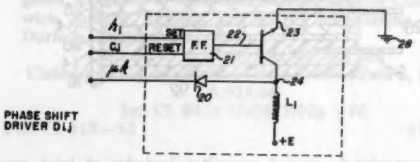
magnetic materials, an AC demagnetizing unit to stabilize the magnets, and a Hall effect gaussmeter to continuously monitor the DC component of magnetism in the presence of the large AC pull-back signal. Reference is made to the claims for a legal definition of the invention.

3,596,145

DRIVE CIRCUIT FOR FERRITE PHASE SHIFTERS

Edward J. Sheldon, Lexington; Rosario Mangiapane, Burlington, and Edwin Segarra, Farmington, all of, Mass., assignors to Raytheon Company, Lexington, Mass.

Division of Ser. No. 726,352, May 3, 1968, Pat. No. 3,484,785.
Filed July 8, 1969, Ser. No. 862,553
Int. Cl. H01h 47/22
U.S. Cl. 317—123 9 Claims



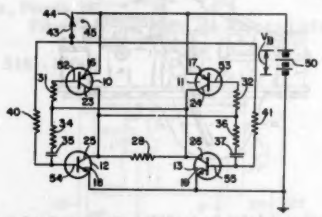
A beam-steering apparatus in combination with a phased array antenna. The apparatus comprises a source of reference pulses of frequency $(1/T_0)$. Also included are means responsive to beam-steering angle magnitude signals Φ for generating proportional pulse width modulated pulses such that each pulse width $T=\Phi T_0/2\pi$. Additional means responsive to the modulated pulses alter the phase of the corresponding phase shift device in the phased array element with output pulses of width T when (T/T_0) 1, and $T-T_0$ when $(T/T_0>1$.

3,596,146

HIGH EFFICIENCY MULTIVIBRATOR

James A. McDonald, Downers Grove, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Filed July 11, 1969, Ser. No. 840,915
Int. Cl. H01h 47/22; H03k 3/281
U.S. Cl. 317—146 9 Claims



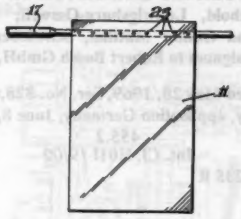
A high efficiency multivibrator circuit uses four transistors arranged in the form of a bridge with two of the transistors connected in series with the load and selectively biased to saturation to provide a current to the load. A second pair of transistors is also connected in series with the load to provide current of opposite polarity thereto, and are biased to saturation while the first pair if biased to nonconduction. The alternate pairs of transistors are alternately biased to saturation by multivibrator action to alternately connect the power supply across the load with opposite polarities.

3,596,147

ELECTRICAL CAPACITOR HAVING IMPROVED TERMINAL WIRE CONNECTION

Dominick J. Zeppieri, North Adams, and Wright, Charles E., Clarksburg, both of, Mass., assignors to Sprague Electric Company, North Adams, Mass.

Filed May 5, 1969, Ser. No. 821,742
Int. Cl. H01g 9/05
U.S. Cl. 317—230 7 Claims



An electrical capacitor having foil electrodes is provided wherein the foils are connected to novel terminal wire connections along a ribbed portion of said wires. The wire irregularity permits consistent wrinkle-free, high quality, foil-to-wire welds to be made.

3,596,148

DOUBLE-DOPED GALLIUM ARSENIDE AND METHOD OF PREPARATION

James B. McNeely, St. Charles, and Donald A. High, Kirkwood, both of, Mo., assignors to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 593,306, Nov. 10, 1966, Pat. No. 3,533,967.
Filed Jan. 19, 1970, Ser. No. 8,150
Int. Cl. H01p 9/00
U.S. Cl. 317—234 R 3 Claims

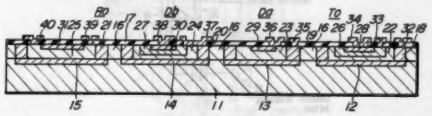
Semiconductor grade gallium arsenide double-doped with oxygen and germanium, tin, sulfur, solenium or tellurium to a net carrier concentration of not greater than about 5×10^{15} carriers/cc., and having resistivities of from 1—200 ohm-cm., and, preferably, from 1—15 ohm-cm. and having electron mobilities of at least 2000 and, preferably, 5000 cm.^{2}/volt sec. and above, is prepared by a gradient freeze crystallization process wherein ingots of high-yield essentially stoichiometric, single crystal gallium arsenide are provided.

3,596,149

SEMICONDUCTOR INTEGRATED CIRCUIT WITH REDUCED MINORITY CARRIER STORAGE EFFECT

Tsugio Makimoto, Kodaira-shi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Continuation of application Ser. No. 752,049, Aug. 12, 1968.
This application Jan. 19, 1970, Ser. No. 4,468
Claims priority, application Japan, Aug. 16, 1967, 42/52220
Int. Cl. H01l 19/00
U.S. Cl. 317—235 R 10 Claims



A semiconductor integrated circuit in which a P-type semiconductor layer epitaxially grown on the surface of a P-

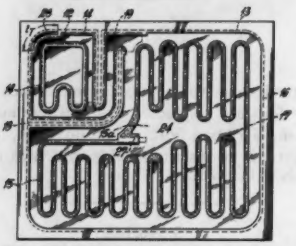
type semiconductor substrate containing N^+ buried layers therein is divided into a plurality of electrically isolated portions by N^+ type regions which are formed by diffusing a donor impurity into the surface of said P-type semiconductor layer towards the N^+ type buried layers, the divided P-type semiconductor portions forming individually diodes and transistors with the N^+ type regions connected to said buried layers as their structural elements.

3,596,150

MONOLITHIC TRANSISTOR CIRCUIT

Gottfried Berthold, Ludwigsburg-Osweil; Hans Linstedt, Stuttgart, and Gunter Matthai, Schwieberdingen, all of, Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed May 28, 1969, Ser. No. 828,613
Claims priority, application Germany, June 8, 1968, P 17 64 455.2
Int. Cl. H01l *19/00*
U.S. Cl. 317—235 R **10 Claims**



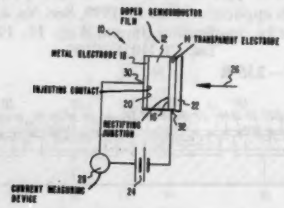
A semiconductor body of collector material has a first and second base region diffused into the collector material, and a first and second emitter region diffused into the base regions. A narrow channel of base material connects the two base regions. A metallic coating connects the first emitter region with the second base region. This metallic coating extends over the connecting channel and is situated directly on the surface of the semiconductor body. The first emitter region may be extended into the second base region directly under the metal coating which connects the first emitter with the second base.

3,596,151

CONSTANT SENSITIVITY PHOTOCONDUCTOR DETECTOR WITH A TIN OXIDE-SEMICONDUCTOR RECTIFYING JUNCTION

Graeme W. Eldridge, Cambridge, and Fred Chernow, Burlington, both of, Mass., assignors to Electro-Tec Corporation poration

Filed June 10, 1966, Ser. No. 556,653
Int. Cl. H01l *11/00*
U.S. Cl. 317—235 R **3 Claims**



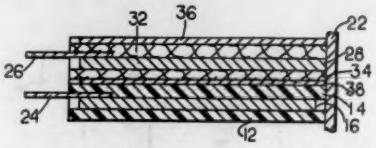
A photoconductor cell having substantially flat response to light intensities over a large portion of the visible spectrum is disclosed. The photoconductor cell comprises a sandwich construction of a heavily doped semiconductor film, a transparent electrode forming a rectifying junction with the front face of the semiconductor film, and a metal back electrode forming an injecting contact with the back face of the semiconductor film.

3,596,152

CAPACITOR WITH LAMINAR ELECTRODE

William M. Allison, Williamstown, Mass., and Atlee Vail, Stamford, Vt., assignors to Sprague Electric Company, North Adams, Mass.

Filed Jan. 12, 1970, Ser. No. 2,228
Int. Cl. H01g *3/195*
U.S. Cl. 317—258 **5 Claims**



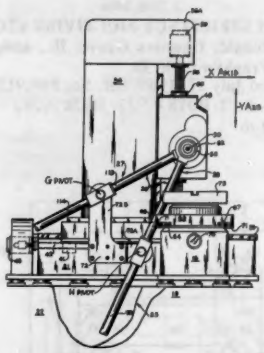
The convolutely wound capacitor includes at least one laminar electrode wherein a metal foil is sandwiched between metallized insulative material and in connection along one edge of the conductive surface coatings thereof.

3,596,153

POSITIONAL CONTROL SYSTEM FOR A MACHINE TOOL

Wallace E. Brainard, New Berlin, and Edward E. Kirkham, Brookfield, both of, Wis., assignors to Kearney & Trecker Corporation, West Allis, Wis.

Filed Aug. 26, 1968, Ser. No. 755,206
Int. Cl. G05b *19/100*
U.S. Cl. 318—574 **16 Claims**



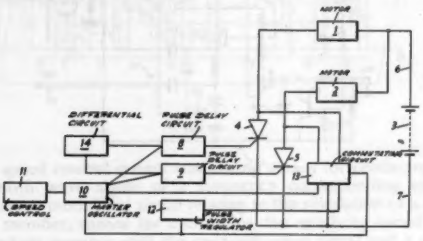
This invention relates to a vector measurement system for controlling positional movement of a machine tool spindle along two mutually perpendicular axes respectively perpendicular to the axis of spindle rotation. The spindle is journaled in a spindlehead vertically movable on a column that is horizontally movable on a supporting base. Separate power translators are respectively connected to effect horizontal column movement and vertical spindlehead movement in accordance with separate feedback error control signals. A pair of separate lineal measuring instruments which are pivotally secured at one end to the spindle, extend in angularly diverging directions and are pivotally secured at their opposite outer ends to spaced apart portions of the support base. A positional control system responsive to vector measurements from both diagonally disposed, pivotally interconnected

lineal measuring transducers provides separate feedback error control signals for indicating the spindle position along its respective horizontal and vertical axes. Predetermined digital input command signals actuate the separate power translators for moving the tool spindle horizontally and vertically to a position determined by positional error feedback signals from the vector measurement control system. In a similar manner, error feedback signals from the vector measurement control system operate to control bodily movement of the tool spindle along only one axis of movement. During each single axis movement, rectilinear positional measurement signals from both pivotally interconnected vector measuring transducers are connected to provide orthogonal positional error control signals.

3,596,154
ELECTRICALLY OPERATED DIFFERENTIALLY VARIABLE DUAL MOTOR DRIVE SYSTEM

David Gurwicz, and Albert E. Sloan, both of Durham, England, assignors to Ransomes Sims & Jefferies Limited, Ipwich, Suffolk, England and Sevcon Engineering Limited, Durham, England

Filed Feb. 4, 1969, Ser. No. 796,382
Claims priority, application Great Britain, Feb. 6, 1968, 5,924/68
Int. Cl. B61c *15/08*; H02p *5/46*
U.S. Cl. 318—52 **11 Claims**

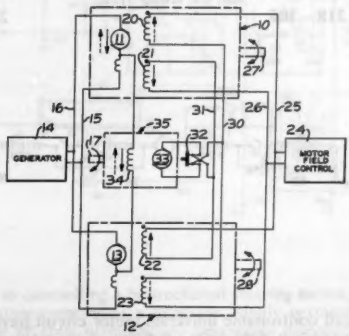


A drive system with two DC electric motors which are each pulse controlled, a master oscillator for supplying pulses to operate the pulse control of each motor and means for varying, for at least one of the motors, the period in a given time of conduction of that motor so as to render different the mean power supplied to each motor.

3,596,155
LOAD-BALANCING CIRCUIT FOR PARALLEL DC MOTORS

James T. Huxtable, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Sept. 24, 1969, Ser. No. 860,654
Int. Cl. H02p *5/46*
U.S. Cl. 318—100 **6 Claims**

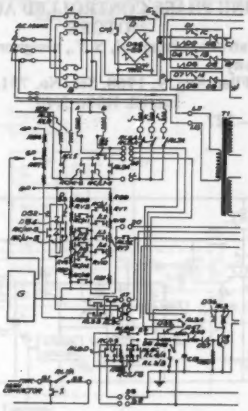


A load-balancing system for paralleled DC motors wherein the field of a separate exciter is connected between the armature circuits of a pair of motors while the armature of the separate exciter is coupled to the fields of the motors to reduce the load unbalance between the motors.

3,596,156
CONTROL SYSTEMS FOR CRANES

Anthony Walter Davey, Long Whatton, Hathern, England, assignor to Herbert Morris Limited, Loughborough, England

Filed July 15, 1968, Ser. No. 744,961
Claims priority, application Great Britain, July 21, 1967, 33622/67
Int. Cl. H02p *1/40*
U.S. Cl. 318—203 **5 Claims**

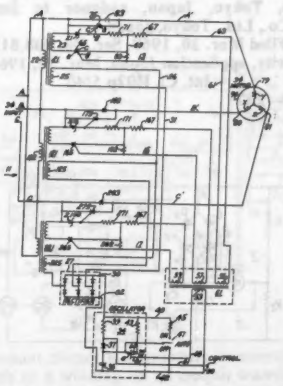


A control system for an electric crane or hoist motor supplied through thyristor circuitry wherein the lifting and lowering speed and travel is controlled by saw tooth voltage generators which adjust the firing angle of the thyristors, the sawtooth waveform being applied to the trigger electrodes of the thyristors.

3,596,157
OSCILLATOR ENERGIZED MOTOR CONTROL CIRCUIT

Richard Zechlin, Beloit, Wis., assignor to Fairbanks Morse Inc., New York, N.Y.

Filed Dec. 8, 1967, Ser. No. 689,077
Int. Cl. H02p *5/40*
U.S. Cl. 318—227 **3 Claims**



An electronic circuit is disclosed for controlling the starting and stopping of a motor. A polyphase source of alternat-

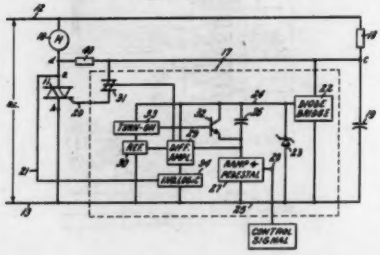
ing current is coupled to a plurality of transformers to provide a rectified DC input to an astable oscillator circuit. The output from the oscillator is coupled to a pulse transformer to control the operation of a plurality of pilot SCRs which function to energize a polyphase motor in accordance with the continuous output from the oscillator. The motor may be controlled in an AUTO mode such that a control signal (which may be generated by a suitable photosensor) provides a sufficient emitter bias on the unijunction transistor of the oscillator circuit to selectively terminate the output to the pulse transformer thereby removing the bias on the SCRs and shutting down the motor.

3,596,158

STABILIZING PHASE CONTROLLED AC INDUCTION MOTORS

Donald L. Watrous, Liverpool, N.Y., assignor to General Electric Company

Filed Aug. 9, 1968, Ser. No. 751,489
Int. Cl. H02p 5/40
U.S. Cl. 318—227 **8 Claims**



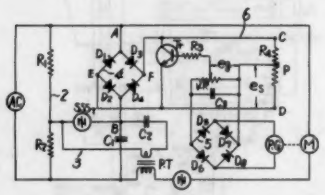
An adjustable speed capacitor run or polyphase AC induction motor energized by phase controlled voltage is stabilized by an AC phase control circuit whose timing is referenced to the zero crossing of the capacitor voltage in an RC circuit and supplies gating signals to a thyristor in series with the motor, characterized by a degenerative feedback circuit comprising an impedance element connected to modify the capacitor voltage in such manner that the cessation of thyristor conduction modulates the timing of the next gating signal.

3,596,159

SPEED CONTROL CIRCUIT FOR A SINGLE-PHASE MOTOR, USING A THYRISTOR

Kenzi Kato, Tokyo, Japan, assignor to Janome Swing Machine Co., Ltd., Tokyo, Japan

Filed Mar. 20, 1969, Ser. No. 808,813
Claims priority, application Japan, Mar. 22, 1968, 43/18190
Int. Cl. H02p 5/40
U.S. Cl. 318—227 **5 Claims**



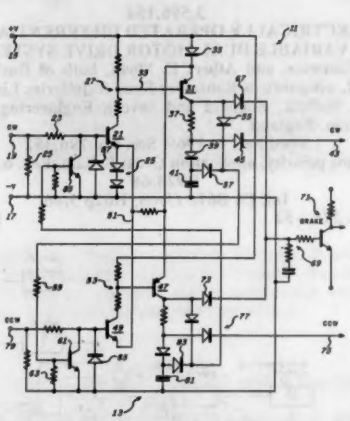
The present motor speed control circuit uses a thyristor and a single phase of the ignition circuit is automatically changed in response to changes in the speed of the motor due to load changes thereby stabilizing the speed of the motor to a given speed.

3,596,160

INTERLOCKING DIRECTIONAL CONTROL AND BRAKING CIRCUIT FOR BRUSHLESS DC MOTOR

Rodney G. Rakes, Charlottesville, Va., assignor to Sperry Rand Coporation

Filed Oct. 1, 1969, Ser. No. 862,736
Int. Cl. H02p 1/22
U.S. Cl. 318—258 **8 Claims**



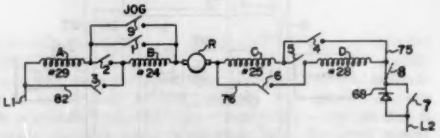
A control circuit for a reversible brushless DC motor (BDCM) includes first and second channels to supply clockwise and counterclockwise command signals to the motor in response to corresponding directional input signals. The two channels are interlocked so that a command signal in one channel disables the other channel. Each channel also includes means to delay the formation of a command signal for a predetermined time and a braking circuit coupled to each channel for providing a braking signal in the absence of a command signal.

3,596,161

UNIVERSAL MOTOR SPEED CONTROL CIRCUITS

Roy L. Swanke, Newington, and Gordon H. Raymond, Southington, both of, Conn., assignors to Dynamics Corporation of America, New York, N.Y.

Filed Apr. 7, 1969, Ser. No. 813,957
Int. Cl. H02p 7/12
U.S. Cl. 318—305 **23 Claims**



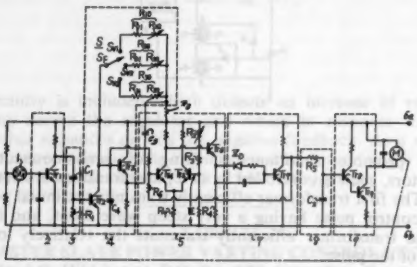
A speed controllable universal motor circuit having multiple independent field coils of different impedances permutated by switches which interconnect them and are actuated by individually operable pushbuttons of a slider permutation switch to provide a maximum number of possible predeter-

mined circuit patterns for the field coils, with a minimum number of switches and of field coils for significantly different speeds at any one or more of which the motor may be energized continuously or intermittently by an additional pushbutton through one or more of the speed permutations that is provided when a stop switch is actuated.

3,596,162
SPEED CONTROL SYSTEM WITH COMPARISON OF A SAWTOOTH WAVE WITH A REFERENCE LEVEL

Jun Takayama, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed May 7, 1969, Ser. No. 822,640
Claims priority, application Japan, May 13, 1968, 43/39190
Int. Cl. H02p *5/16*
U.S. Cl. 318—341 **7 Claims**

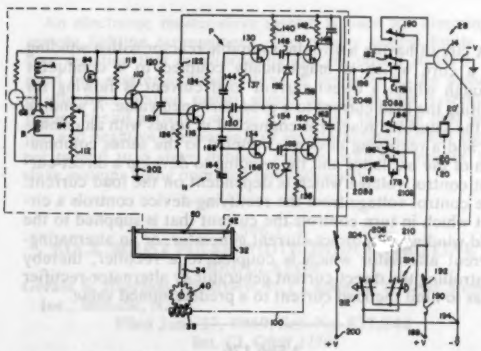


A speed control system comprising means for producing a sawtooth wave signal of a frequency corresponding to a frequency-modulated signal relating to the revolution of a rotary member, means for controlling the revolving speed of the rotary member with the sawtooth wave signal and a circuit for changing the inclination of the sawtooth wave.

3,596,163
AUTO PILOT FOR BOATS

Glenn R. Barrett, Box 85, Edinburg, Ind.

Filed June 4, 1969, Ser. No. 830,416
Int. Cl. G05d *1/00;* **B63h** *25/02*
U.S. Cl. 318—588 **20 Claims**

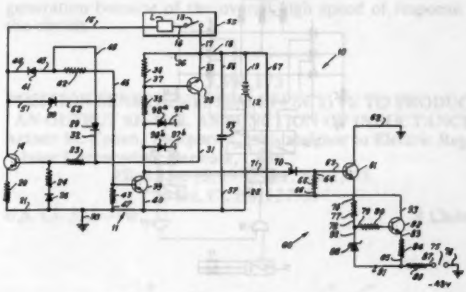


For use in controlling a bidirectional steering motor, an autopilot system comprising a rotatable, highly permeable bar and a pair of coils diametrically oppositely disposed about the path of rotation of the bar. The coils are connected in series and an amplifier is used operably to connect the coils to first and second switch means. The first switch means drives the steering motor in one direction and the second switch means drives the motor in the opposite direction. Negative pulses provided by the coils are amplified to operate the first switch means and positive pulses provided by the coils are amplified to operate the second switch means. The coils are mounted on a platform and, preferably, means is provided for driving the platform about the rotational axis of the bar to move the coils toward a position providing a null output.

3,596,164
TELEPHONE CONTROL CIRCUIT

Donald L. Bise, Tustin, and Ronald J. Surprenant, Anaheim, both of, Calif., assignors to The Okonite Company, Ramsey, N.J.

Filed Sept. 17, 1969, Ser. No. 858,637
Int. Cl. H02j *9/00*
U.S. Cl. 320—9 **5 Claims**

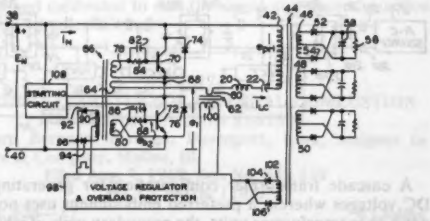


A control circuit for use at a subscriber station end signal converter having a high impedance constant current generator for producing voice transmission direct current and for controlling operation of other components of the signal converter. The control circuit also includes a trickle charge circuit for charging a battery of the subscriber station end signal converter, the control circuit allowing operation of the trickle charge circuit only during periods of nonoperation of the telephone set at the subscriber station.

3,596,165
CONVERTER CIRCUIT HAVING A CONTROLLED OUTPUT

Roland E. Andrews, Portland, Oreg., assignor to Tektronix Inc., Beaverton, Oreg.

Filed July 24, 1969, Ser. No. 844,371
Int. Cl. H02m *3/28*
U.S. Cl. 321—2 **14 Claims**



An LC resonant circuit is alternately connected from DC input terminals to a winding on an output transformer via a pair of alternately operating switching transistors which turn on in synchronism with the resonant frequency of the LC circuit. Switching is accomplished when current flow through each transistor is substantially zero. The transistors are kept

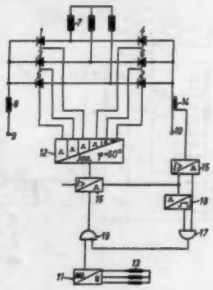
off for a selected period of time during each cycle of the LC circuit waveform, dependent upon a DC output voltage derived via rectification means from another winding on the output transformer. The frequency of operation of the circuit is responsive to the DC output voltage level for regulating the same.

3,596,166

CONVERTER ARRANGEMENT FOR ALTERNATING AND DIRECT CURRENT OPERATION

Werner Faust, Wettingen, Switzerland, and Jurgen Langer, Waldhut, Germany, assignors to Aktiengesellschaft Brown Boveri & Cie, Baden, Switzerland

Filed June 3, 1969, Ser. No. 829,979
Claims priority, application Sweden, June 10, 1968, 8598/68
Int. Cl. H02m *1/18*
U.S. Cl. 321—5 **4 Claims**



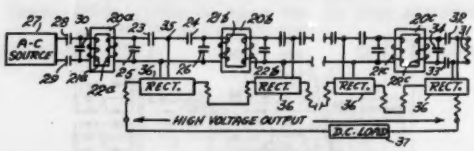
A converter arrangement is provided which can be set to operate both as an inverter and as a rectifier and wherein the converter elements are constituted by thyristors which are liable to damage by sharply rising voltages thereon brought about by overcurrent conditions when the converter is operating as a rectifier. To protect the converter elements against damage in such event, means are provided for changing over the operating mode of the converter from rectifier to inverter operation and to also cut off the converter operation completely after a predetermined time delay if the overcurrent condition persists.

3,596,167

CASCADE TRANSFORMER HIGH VOLTAGE GENERATOR

Harald A. Enge, Winchester, Mass., assignor to Deltaray Corporation, Winchester, Mass.

Filed Aug. 14, 1969, Ser. No. 850,051
Int. Cl. H02m *7/00*
U.S. Cl. 321—15 **12 Claims**



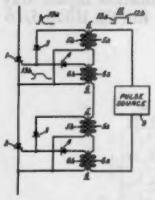
A cascade transformer configuration for generating high DC voltages wherein a preferred embodiment uses nonmagnetic core transformer units, the secondary coils of which are capacitively coupled to the primary coils of adjacent units. The capacitance values are selected so as to provide resonance conditions so that rectifier-multiplier chains connected to each pair of capacitively coupled coils produce DC voltages with the least loss of power. Each pair of capacitively coupled coils can be formed as an integral deck unit and such deck units stacked in a column with their rectified voltages connected in series to produce a high DC voltage output having a uniform DC voltage gradient along the column.

3,596,168

THYRISTOR-TRIGGERING ARRANGEMENT USING DUAL PULSE TRANSFORMERS HAVING DISSIMILAR CHARACTERISTICS

Jurgen Hengsberger, Berlin, Germany, assignor to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Germany

Continuation-in-part of Ser. No. 699,620, Jan. 22, 1968, abandoned. Filed Apr. 17, 1970, Ser. No. 29,541
Claims priority, application Germany, Jan. 27, 1967, L 55 597
Int. Cl. H02m *7/00*; H03k *17/00*
U.S. Cl. 321—27 R **8 Claims**



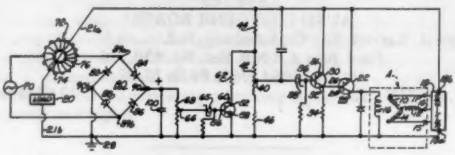
To promote simultaneous firing of series-connected thyristors, each is controlled by two pulse transformers in series. The first transformer efficiently transmits the initial part of a control pulse having a very steep wave front, and the second transformer efficiently transmits the relatively long body of the pulse.

3,596,169

REGULATING CIRCUIT EMPLOYING A SATURABLE REACTOR

Marion L. Snedeker, Cleveland, Ohio, assignor to Victoreen Leece Neville, Inc., Cleveland, Ohio

Filed Oct. 16, 1969, Ser. No. 866,954
Int. Cl. H02p *9/30*
U.S. Cl. 322—27 **12 Claims**



A circuit having a toroidal saturable reactor with a winding on a core which is magnetically coupled to a conductor through which a direct-current load current is flowing for limiting the load current to a predetermined value. A winding on the saturable reactor is connected in series with an oscillator and a rectifying device is coupled to the series combination of the oscillator and the winding to develop a direct-current control voltage which is dependent on the load current. The control voltage from the rectifying device controls a circuit which in turn controls the current that is supplied to the field winding of a direct-current generator, or an alternating-current alternator which is coupled to a rectifier, thereby controlling the direct-current generator or alternator-rectifier so as to limit the load current to a predetermined value.

3,596,170

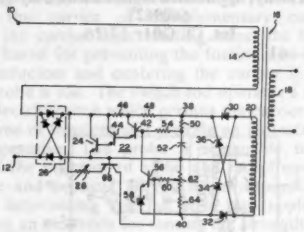
CIRCUIT FOR REGULATING PEAK VALUES OF AN AC WAVE

Hiro Moriyasu, Portland, and Hideki Iwata, Beaverton, both of, Oreg., assignors to Tektronix, Inc., Beaverton, Oreg.

Filed Sept. 12, 1969, Ser. No. 857,365
Int. Cl. G05f *1/44*
U.S. Cl. 323—17 **11 Claims**

A peak-to-peak regulator is coupled in series between an AC power source and the primary of an AC transformer.

Another winding on the same transformer is employed to detect when peak values of the AC wave exceed a predetermined value, and negative feedback in response thereto increases the impedance of the regulator. Positive feedback



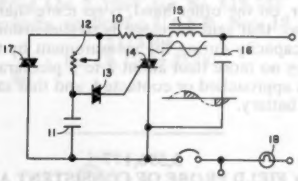
circuitry is included which detects an increase in voltage drop across the regulator and which in response thereto further enhances or aids the negative feedback. As a result, the current through the regulator is minimized for the duration of the peak of the AC wave which it regulates.

3,596,171

MASTER SLAVE POWER VARYING CONTROL SYSTEM

Roland O. Hildebrand, P.O. Box 173, Carrollton, Tex.

Filed Jan. 20, 1970, Ser. No. 4,203
Int. Cl. H05b *39/04*; G05f *1/00*
U.S. Cl. 323—24 16 Claims



An electronic master-slave system is used for dimming a remote lighting arrangement. The master system limits the time duration that an alternating current power signal is applied to a master lighting system. In response to the passage of the time limited power signal to the master system, a trigger circuit activates a gate for varying the time that positive and negative components of an alternating current signal are passed to a slave lighting system, with the master and slave systems being operated synchronously.

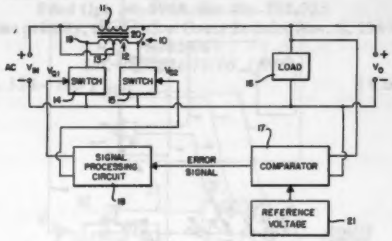
3,596,172

BUCK-BOOST PULSE-WIDTH-MODULATED LINE REGULATOR

Gerald S. Harrison, Plainview, N.Y., assignor to Lear Siegler, Inc., Melville, N.Y.

Filed June 27, 1969, Ser. No. 837,044
Int. Cl. G05f *1/30*
U.S. Cl. 323—45 5 Claims

An AC regulator controls the voltage applied to a load by using pulse-width-modulated correction signals. Any deviation of load voltage from that desired is sensed and converted to pulse-width-modulated signals. These signals switch alternate halves of a secondary winding of a transformer connected in a buck-boost arrangement. The net voltage applied to the secondary winding is a function of the pulse-width modulation and a net correction voltage is coupled to the primary winding which is series connected between line and load. The invention also has application to line transient



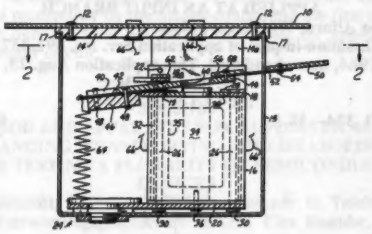
generation because of the overall high speed of response of the circuit.

3,596,173

POSITION SENSING SYSTEM EFFECTIVE TO PRODUCE AN OUTPUT SIGNAL AS FUNCTION OF INDUCTANCE

Arthur M. Cohen, Westport, Conn., assignor to Electric Regulator Corporation, Norwalk, Conn.

Filed Jan. 15, 1970, Ser. No. 2,993
Int. Cl. H01f *27/06*
U.S. Cl. 323—90 9 Claims



A sensing or control system, effective to sense the position of a mechanical element and produce an electrical signal in accordance with said position, includes a magnetic member adapted to be moved in response to the movement of the mechanical element into magnetic engagement with a magnetic core received within and extending from an induction coil, thereby to change the inductance of said coil. The signal producing means comprises an electrical circuit incorporating said inductance coil and effective to compare a voltage responsive to the inductance of said coil with a reference voltage and calibrated to null the signal at a desired position of said mechanical element.

3,596,174

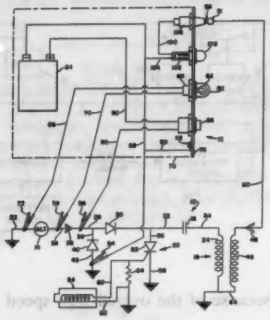
TESTING APPARATUS FOR INTERNAL COMBUSTION ENGINE IGNITION SYSTEM

La Vern Bernard Hovenga, Davenport, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Aug. 7, 1969, Ser. No. 848,149
Int. Cl. G01m *15/00*
U.S. Cl. 324—17 6 Claims

A portable ignition tester for isolating ignition problems to the alternator output or the solid state capacitor discharge ignition. The alternator test circuit is applied directly across the alternator terminals and consists of an incandescent light bulb which will glow when the alternator is operated at cranking speed if the alternator output is high enough to operate the ignition system. The ignition test circuit consists of a transistor battery, a switch, and a neon bulb. The battery replaces the alternator as a voltage source and momentary

closing of the switch charges the ignition capacitor for one firing. With the neon bulb connected to the high voltage



spark plug wire, discharging the capacitor will fire the neon bulb once if the ignition is working properly.

3,596,175

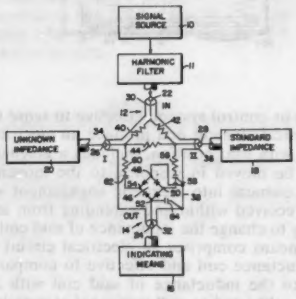
ELECTRICAL MEASURING APPARATUS FOR PROVIDING AN OUTPUT SIGNAL AT AN OUTPUT BRANCH CHARACTERISTIC OF THE RELATIONSHIP OF IMPEDANCES PRESENTED AT FIRST AND SECOND SIDE BRANCHES AT THE FREQUENCY OF ENERGY APPLIED AT AN INPUT BRANCH

Andrew Alford, Winchester, Mass.

Continuation-in-part of application Ser. No. 391,337, Aug. 21, 1964, now abandoned. This application Aug. 23, 1968, Ser. No. 756,734

Int. Cl. G01r *27/04*

U.S. Cl. 324—58 A **4 Claims**



A radio frequency signal source delivers a signal to an input branch through a harmonic filter to provide an output signal on an output branch indicated by indicating means representative of the difference in impedance between a standard impedance connected to one side branch and an unknown impedance connected to the other side branch. A pair of equal resistances connect the high terminal of the input branch to the respective high terminals of the respective side branches. A higher resistor intercouples the high terminals of the side branches so that when the side branches are terminated in their characteristic impedance, typically 50 ohms, the impedance presented at the input branch is substantially equal to the input branch characteristic impedance, typically 50 ohms. Means including isolating resistors and a bridge circuit couples the side branch high terminals to the output branch high terminal, all four branches having low, or grounded terminals, that are interconnected.

3,596,176

ELECTRONIC CAPACITIVE MOISTURE INDICATOR INCLUDING OSCILLATOR POSITIVE FEEDBACK MEANS

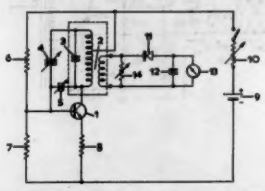
Robert Ronald Laupman, Wijchen, Netherlands, assignor to N.V. AUCO, Wijchen, Netherlands

Filed July 5, 1967, Ser. No. 651,263

Claims priority, application Netherlands, July 8, 1966, 6609627

Int. Cl. G01r *27/26*

U.S. Cl. 324—61 **9 Claims**



Electronic capacitive moisture indicator, comprising a transistor oscillator system including a measuring capacitor and a source of energy, a measuring system and a suitable envelope, characterized in that said measuring capacitor is formed as a plate-type capacitor and is included in the oscillator feedback, whereby the alternating voltage of the oscillator varies in dependence on the capacity of the measuring capacitor, and that said measuring capacitor is so dimensioned that said alternating voltage approaches zero in the absence of an object to be measured, that the maximum capacity between the measuring system and the transistor oscillator without the capacitor plates on the one hand, and the mass of the object to be measured or part thereof, including the user, on the other hand, is no more than about 5 to 10 picofarad, that said envelope is so dimensioned that the maximum capacity during the measurement by the user can be varied by no more than about 2 to 5 picofarad when said envelope is approached or contacted, and that said source of energy is a battery.

3,596,177

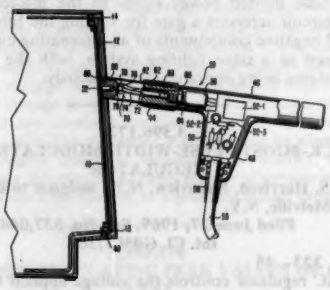
ENERGY FIELD PROBE OF CONSISTENT ATTITUDE CAPABLE OF MOVING WITH THREE DEGREES OF FREEDOM

Emanuel Victor Butera, Capitola, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed May 8, 1969, Ser. No. 823,088

Int. Cl. G01r *31/02*

U.S. Cl. 324—72 **8 Claims**



The accuracy of data obtained by coordinate determining systems associated with graphical displays is increased by an energy field probe of consistent attitude. An energy transducing device is arranged in a protruding truncated cone portion of a carrier mounted in an elongated barrel for movement in

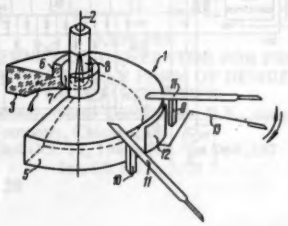
two degrees of freedom. The transducing device in the carrier then assumes a predetermined attitude with respect to the display coordinate determining system with little regard to the angle of attack of the barrel of the probe. The contact surface of the probe is slightly concave for insuring positive positioning on curved display surfaces such as the face of a cathode-ray tube. A laterally flexible switch rod member has a head of generally rectangular configuration mating in a recess in the carrier of complementary configuration restraining the carrier from rotating about the longitudinal axis of the barrel for preventing the fouling and breaking of electric conductors and centering the carrier in the barrel when the probe is idle. The switch rod operates a momentary push-pull electric switch which permits the carrier to move in a third degree of freedom and provide an indication that the probe is operative. The probe is applicable to both the sensing and the injecting of audio and radiofrequency electromagnetic and acoustic energy in correspondingly based coordinate determining systems. It is also applicable to a probe having an electrode for sensing the strength of an electrostatic field and to probes having one or more luminous energy sensors such as used in CRT display and optical projection systems. A pistol-griplike body depending from the barrel serves as a duct for electric leads to the associated apparatus and also carries electric amplifying circuit components and the like. Luminous energy pattern sensing probes have the photoresponsive devices arranged with respect to this depending body so that the probe is automatically oriented for the pattern within permissible tolerances. Combinations of luminous energy and electromagnetic energy and electrostatic energy transducers are suggested.

3,596,178

DEVICE FOR MEASURING ELECTRICAL QUANTITIES WITH ADJUSTABLE MAXIMUM AND MINIMUM THRESHOLD LIMITATION

Anatoly Grigorievich Sklyaruk, ulitsa, 4 proezd Krupskoi, 2, kv. 36, and Viktor Yakovlevich Shaevich, ulitsa Kommunarov, 290, kv. 28, both of Krasnodar, U.S.S.R.

Filed Apr. 2, 1969, Ser. No. 812,751
Claims priority, application U.S.S.R., Nov. 18, 1966, 1114306
Int. Cl. G01r *31/00*
U.S. Cl. 324—96 **6 Claims**



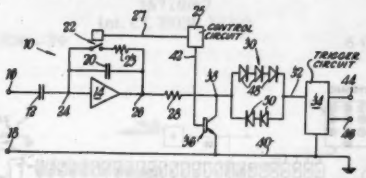
A device for measuring electrical quantities with adjustable maximum and minimum threshold limitation comprises an electrical meter movement with a flag secured to a moving part which flag intercepts the luminous flux from a light source aligned with the axis of the moving part, a light conductor made of material whose refraction factor differs from that of air, and light sensitive elements sensing the luminous flux passing through the light conductor, the sensitive elements being adapted to be displaced when setting a prescribed threshold limitation. The light conductor is made in the form of a stepped biconcave lens with an optical axis coinciding with the axis of the moving part, the steps of the lens being formed by concentric surfaces limiting the lateral faces of the lens and remote from the optical axis by different radii. The step of smaller radius has a recess accommodating a light source, while the step of larger radius is provided with a concave surface for complete internal reflection of the luminous flux of the light source.

3,596,179

DETECTION OF PEAK AND/OR TROUGH POINTS OF A VARIABLE ELECTRIC CURRENT

Colin Edward Hunter, Luton, England, assignor to George Kent Limited, Luton, England

Filed Oct. 30, 1968, Ser. No. 771,753
Claims priority, application Great Britain, Nov. 6, 1967, 50420/67
Int. Cl. G01r *19/16, 1/100*
U.S. Cl. 324—103 P **8 Claims**



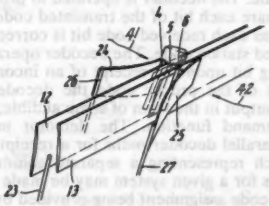
A method and apparatus are disclosed for detecting peak and/or trough points of a variable voltage signal in which the signal is applied through a capacitor to an amplifier and the amplifier output is divided into separated pulses by a switch recurrently operable to provide 100 percent feedback across the amplifier. A trigger circuit responsive to the pulses gives an output with a polarity indicating the direction of change of the variable voltage signal. A second switch can be operated recurrently by the means controlling the first switch to select only the final portion of each pulse for application to the trigger circuit.

3,596,180

METHOD AND APPARATUS FOR AUTOMATICALLY ARRANGING, TRANSPORTING, AND MEASURING, AND/OR TESTING A PLURALITY OF SEMICONDUCTOR DEVICES

Alfons Schmitt, Talheim, Germany, assignor to Telefunken Patentverwertungsgesellschaft m.b.H., Ulm Danube, Germany

Filed Apr. 8, 1968, Ser. No. 719,642
Claims priority, application Germany, Apr. 8, 1967, T33677
Int. Cl. G01r *31/22, 15/12*
U.S. Cl. 324—158 T **11 Claims**

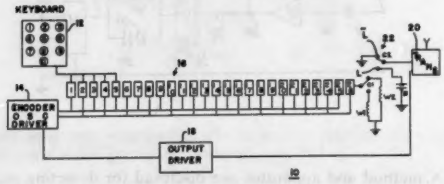


A method and apparatus for arranging and measuring and/or testing characteristics of subminiature semiconductors. The semiconductors are fed onto and lined up, one behind the other, on tracks which extend parallel with respect to each other. Electrode leads extending from the semiconductors are disposed between the tracks, thus provided. At predetermined locations along the tracks electrical contact means are provided which electrically connect the semiconductor electrode leads to measuring and/or testing instruments.

3,596,181
SELECTIVE SIGNALLING SYSTEM

Edward Camp Dowling, Harrisburg; Earl Wilbert Eshenauer, Jr., Steelton; Robert Earl Jones, Camp Hill, and Michael Joseph Yaccino, Mechanicsburg, all of, Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Continuation-in-part of application Ser. No. 531,864, Mar. 4, 1966, now abandoned. This application July 15, 1966, Ser. No. 565,624
Int. Cl. H04b 1/00
U.S. Cl. 325—55 11 Claims



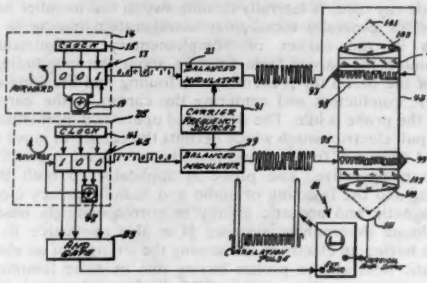
The disclosure relates to a central station having an encoder which is operable to selectively call any one of a plurality of individual remote stations by the transmission of a unique code which is comprised of a series of time intervals occupied by the presence or absence of a signal level. The encoder includes an input such as a keyboard to first develop the particular code to be transmitted in terms of a two-out-of-five bit position representation for each character of the transmitted message. The encoder also includes a register to temporarily store a combination of generated characters and then to automatically add tag and stop characters and translate the composite message into the previously mentioned signal mode for transmission. The encoder circuit transmits a given composite signal at an appropriate time relative to the availability of signalling channels. The code transmitted is of pulses or signals of long length relative to the typical pulse or signal length of noise. Each receiver station includes means for receiving the transmitted composite message, translating such into a code which may be serially decoded in a register decoder set up for serial comparison of each bit of such translated code. The decoder is operated to progressively and serially compare each bit of the translated code and advance a bit as long as each received code bit is correct with respect to the assigned station code. The decoder operates to destroy the advancing bit upon the receipt of an incorrect code bit. In the event of the proper code the decoder is made to produce an output in the form of some audible, visual indication or command function. The detector may include a number of parallel decoder paths for a receipt of a plurality of codes each representing a separate command function. The receivers for a given system may be made identical with variations in code assignment being provided by a novel code plug assembly.

3,596,182
MULTIPATH DELAY AND CORRELATION BANDWIDTH ANALYZER

Ronald R. Menard, Whiteboro, N.Y., assignor to The United States of America as represented by the Secretary of the Air Force

Filed May 15, 1969, Ser. No. 824,892
Int. Cl. H04b 1/00
U.S. Cl. 325—67 5 Claims

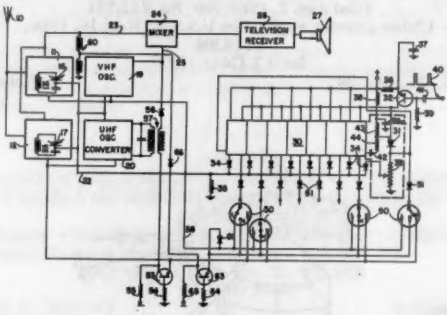
Multipath delay is analyzed by generating and transmitting a pseudorandom signal and at the receiver the reverse replica of the transmitted signal is also generated. The two signals are correlated in an optical correlator where they are passed through ultrasonic modulators while collimated light passes through them and the output is read out on an oscilloscope.



3,596,183
MULTIBAND TUNING CONTROL SYSTEM WITH PROGRAMMABLE ELECTRONIC SWITCHING

Rolf E. Spies, Lyons, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Apr. 18, 1969, Ser. No. 817,379
Int. Cl. H03j 5/24
U.S. Cl. 325—465 6 Claims

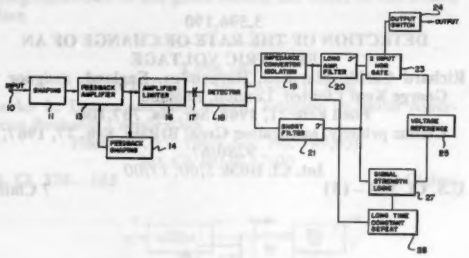


Tuning of a television receiver capable of receiving signals in the UHF and VHF bands of frequencies is controlled by an electronic ring counter circuit, the outputs of which are supplied through manually settable switches for selecting either the UHF or the high or low portions of the VHF bands. The band is selected by supplying a DC operating potential to the tuning circuit for the desired band through the switch connected to an energized stage of the ring counter. Each of the tuners is tuned to selected channels by a varactor diode tuning circuit, and the DC tuning voltage for the varactor diodes also is obtained from the energized stage of the ring counter, but is supplied through an adjustable potentiometer for each stage. Thus, any one of the stages of the counter may be adjusted to tune the receiver to any of the desired UHF or VHF channels by proper setting of the switch and the potentiometer for that stage of the counter. Provision is made for stepping the counter to the stage which is set to correspond to the desired band and channel within that band in order to effect electronic selection of the channel which is to be received.

3,596,184
SQUELCH CIRCUIT WITH SQUELCH TAIL ELIMINATION

George M. Hanus, Norridge, and Alfred R. Lucas, Northbrook, both of, Ill., assignors to Motorola, Inc., Franklin Park, Ill.

Filed Aug. 15, 1969, Ser. No. 850,447
Int. Cl. H04b 1/10
U.S. Cl. 325—478 10 Claims

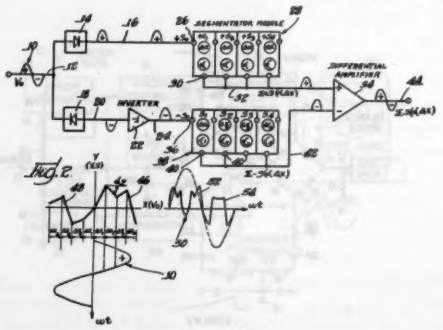


An integrated circuit includes, on a single chip, a noise-detection circuit and a squelch filter circuit having a short time constant ripple filter and a long time constant ripple filter. The noise detector includes a differential feedback amplifier with external circuitry for controlling the gain and frequency shaping of the amplifier in a feedback circuit. A high-impedance cascaded emitter-follower circuit of opposite conductivity transistors couples the noise detector to the ripple filters, with the long time constant ripple filter being responsive to signals just above the squelch threshold in order to provide maximum sensitivity and smooth operation. At strong signal levels, where such a long time constant ripple filter is not necessary, the circuit is switched to a short time constant filter by a signal level detection circuit. If the signal drops to a low signal level relatively slowly, the circuit switches back to the long time constant filter; but if the signal drops rapidly, as for example, where the transmitter ceases transmission, only the short time constant filter is operative and the turnoff of the squelch circuit is very rapid, thereby eliminating the noise burst or "squelch tail."

3,596,185
TRANSFER FUNCTION GENERATOR FOR PROVIDING A COMPLEX WAVE FORM OF DESIRED CHARACTERISTICS

Eric Gschwandtner, North Tonawanda, N.Y., assignor to The Wurlitzer Company, Chicago, Ill.

Filed Oct. 17, 1968, Ser. No. 768,237
Int. Cl. H03k 5/08
U.S. Cl. 328—28 10 Claims

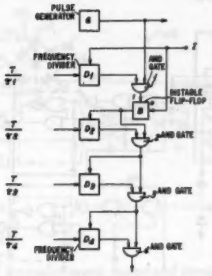


A sine wave is split into positive and negative-going portions, the latter of which is inverted. Both half waves are now positive-going, and both are applied to a respective series of segmentator modules. These modules slice the sinusoidal half waves into strata of adjustable amplitude, and each linearly amplifies a respective stratum of variable gain. The outputs of the segmentators are combined in a differential amplifier to provide a complex wave form of desired characteristics.

3,596,186
DEVICE FOR COUNTING IMPULSES

Jean Claude Berney, Lausanne, Switzerland, assignor to Bernard Golay S. A., Lausanne, Switzerland

Filed Nov. 19, 1968, Ser. No. 777,052
Claims priority, application Switzerland, Nov. 28, 1967, 16710/67
Int. Cl. H03k 21/00
U.S. Cl. 328—39 6 Claims

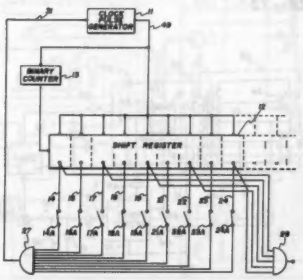


This disclosure concerns a device for counting impulses which has a generator of reference signals emitted with a given period of repetition, at least one dephasing device delivering a periodic signal with a period equal to the reference period and whose phase is modified progressively by the impulses to be counted which are applied thereto and a comparison signal for the phase of the reference signal and the phase delivered by the dephaser, the difference in phase being proportional to the number of impulses counted.

3,596,187
PULSE CODE GENERATOR

William J. Thompson, 5363 Van Nuys Place, San Diego, Calif.

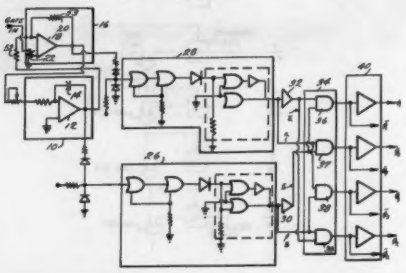
Continuation-in-part of application Ser. No. 684,265, Nov. 20, 1967, now abandoned. This application Nov. 26, 1969, Ser. No. 880,313
Int. Cl. H03k 1/18
U.S. Cl. 328—63 1 Claim



A pulse code generator for generating morse code logic having a voltage-controlled clock pulse generator, the output of which is coupled as a shift pulse to a digital shift register

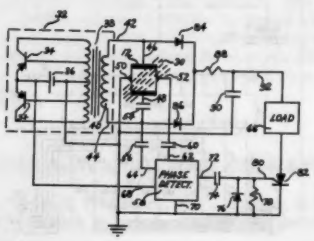
and through a binary counter to the signal input of the digital shift register, each stage of the digital shift register having an output which can be selectably coupled to an output OR gate and to a feedback OR gate; the output of the feedback OR gate being coupled to the controlled input of the voltage-controlled clock pulse generator to control the voltage-controlled clock pulse generator's offtime or ontime by the presence or absence of a pulse at the control input; the code generated is determined by which stages of the digital shift register are coupled to the feedback OR gate and to the output OR gate.

3,596,188
FOUR-PHASE DIGITAL CLOCK
John A. Hasse, Bloomington, Minn., assignor to Control Data Corporation, Minneapolis, Minn.
Filed Dec. 3, 1969, Ser. No. 881,905
Int. Cl. H03k *1/00, 19/20*
U.S. Cl. 328—62 **9 Claims**



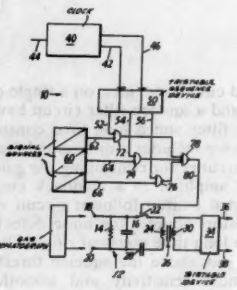
A four-phase digital clock for use in digital systems whereby an oscillator means simultaneously provides a first triangular waveshape output signal and a second substantially square waveshape output signal and a second substantially square waveshape output signal in a quadrature with respect to one another and including logic means coupled to the outputs of the oscillator means for providing the four-phase digital clock signal. The oscillator includes a Miller integrator connected in series with a high gain positive feedback amplifier the output of which is fed back to the input of the integrator. The four clock pulses are derived by sensing the positive-going high gain amplifier output, sensing the negative-going high gain amplifier output, sensing the zero crossing integrator output (positive-going), and sensing the zero crossing integrator output (negative-going).

3,596,189
NONCONTACT SHAFT SYNCHRONIZER
Frank K. Luteran, 1848 N. Walmont Drive, Jackson, Mich.
Filed Feb. 18, 1969, Ser. No. 800,188
Int. Cl. H03k *17/00;* **G01p** *3/12*
U.S. Cl. 328—72 **12 Claims**



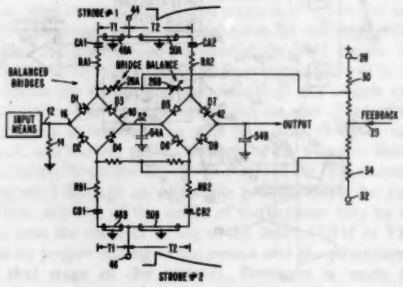
This invention relates to a noncontacting shaft position indicator utilizing the responsive properties of a magnetosensitive device. Shaft position is determined from the variation of the intensity and direction of the magnetic flux linking a rotor on the shaft and a fixed stator. The varying magnetic flux phase and amplitude modulates the high frequency input signal of a magnetosensitive device interposed in the flux path. The phase modulation information is utilized to generate a trigger pulse which is in synchronism with the instantaneous shaft position. Electrical means are provided to further shape the magnetic field to provide a means of retarding or advancing the generation of the trigger pulse in relation to the instantaneous shaft position.

3,596,190
DETECTION OF THE RATE OF CHANGE OF AN ELECTRIC VOLTAGE
Richard Carlile Marshall, Harpenden, England, assignor to George Kent Limited, London, England
Filed Feb. 21, 1968, Ser. No. 707,106
Claims priority, application Great Britain, Feb. 27, 1967, 9280/67
Int. Cl. H03k *5/00, 17/00*
U.S. Cl. 328—151 **7 Claims**



A device for detecting the slope of a variable electric signal by periodically sampling the signal, which may be obtained for example from a gas chromatograph is operated so that the sampling frequency is varied in a predetermined way with time in accordance with the expected variation of the signal. The slope detecting device can thus be operated with optimum sensitivity and speed of response over an entire chromatograph spectrum. Control of the device can be effected by apparatus providing a control signal of a frequency varied in steps or continuously.

3,596,191
SAMPLING CIRCUIT
Paul E. Stuckert, Katonah, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed June 30, 1969, Ser. No. 837,789
Int. Cl. H04b *1/04*
U.S. Cl. 328—151 **7 Claims**



A sequential gate sampling circuit is shown as used in a sampling oscilloscope. Sampling is achieved by sequentially

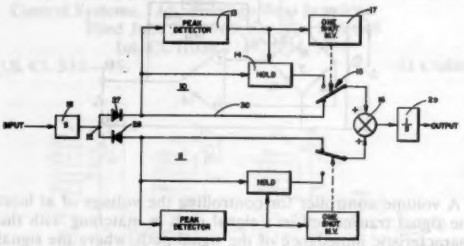
actuating two gates from a common source of strobe pulses. Prior to the initiation of a sampling operation, a first of the gates is quiescently closed and a second of the gates is quiescently open. At the beginning of a sampling operation, a pair of strobe pulses rise very quickly and divide along transmission lines of unequal length, switching the first gate to the open state and subsequently switching the second gate to the closed state. The sampling time duration is created by the difference in time between the opening of the first bridge and the closing of the second bridge. This time duration is controlled by the difference in length of the transmission lines allowing operation of the gates during the onset of the strobe pulses.

3,596,192

NONLINEAR LOW-PASS FILTER

Charles L. Lutes, Anaheim, Calif., assignor to North American Rockwell Corporation

Filed Feb. 13, 1969, Ser. No. 799,038
Int. Cl. H03k 17/00
U.S. Cl. 328—165 12 Claims



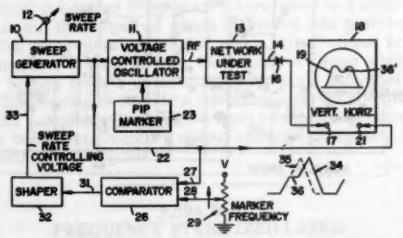
A low-pass filter, the frequency response of which demonstrating substantially no attenuation at frequencies below a preselected break frequency and having substantially zero volts per volt gain at frequencies above the break frequency. First and second oppositely poled unipolarly conductive signalling channels are output coupled to respective inputs of a summing integrator for alternatively coupling an output of and a peak-detected, sampled-and-held output of a differentiator to an input of the integrator. The time interval of the coupling of the peak-detected, sampled-and-held differentiator output corresponds to the break frequency of the filter.

3,596,193

SWEEP OSCILLATOR WITH INTENSITY FREQUENCY MARKER

Duane Edmond Dunwoodie, Los Alto, Calif., assignor to Wiltron Company, Palo Alto, Calif.

Filed Mar. 27, 1968, Ser. No. 716,400
Int. Cl. H03k 4/12
U.S. Cl. 328—185 4 Claims



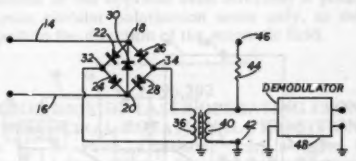
A sweep oscillator for use in conjunction with a cathode-ray oscilloscope provides an oscilloscope trace of a frequency response characteristic of a network under test. An intensified marker portion for identifying the frequency of a particular point on the trace is provided by slowing the electron beam at that point by modifying the sweep rate of the oscillator. A comparator compares the sweep voltage to a preset DC voltage and operates on the sweep voltage to reduce its rate or slope at the marker spot desired. The voltage output of the comparator is shaped to cause the length of the marker on the trace to remain at a constant percentage of the total sweep time.

3,596,194

ELECTRONIC SIGNAL CONVERTER

William A. Dambrackas, Trevose, Pa., assignor to Ultronic Systems Corp.

Filed Feb. 20, 1970, Ser. No. 13,258
Int. Cl. H03d 3/10
U.S. Cl. 329—104 2 Claims



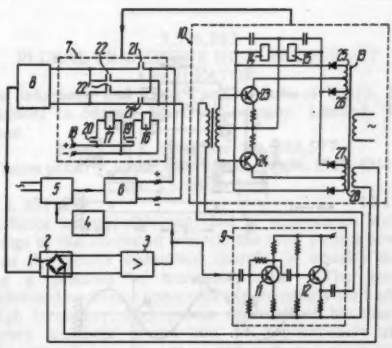
Apparatus used in transforming standard neutral or bipolar teletypelike signals as received from a telephone line into corresponding signals at different power levels for use with electronic equipment. The apparatus displays a variable impedance having first and second sharply different values which are attained as the received signal changes state. A demodulator coupled to the apparatus and responsive to the different impedance values produces the desired corresponding signals at desired power levels for use in the equipment.

3,596,195

REVERSING PROPORTIONAL PROCESS CONTROLLER

Nikolai Mikhailovich Shirshov; Vladimir Gavrilovich Karpova; Vitktor Dmitrievich Leonov, and Vyacheslav Viktorovich Chernyavsky, all of Leningrad, U.S.S.R., assignors to Spetsialnoe Konstruktorskoe Bjuro Poluprovodnikovykh Priborov, Leningrad, U.S.S.R.

Filed Sept. 18, 1968, Ser. No. 760,416
Int. Cl. H03f 1/00
U.S. Cl. 330—1 A 2 Claims



A reversing proportional process controller is disclosed which is based on the adjustment of the current of a load.

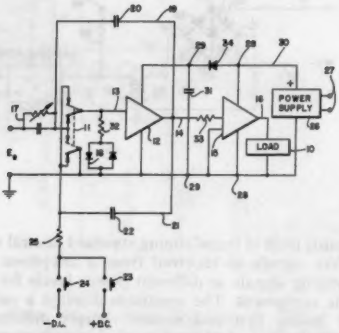
The controller comprises a bridge circuit with a controlled variable transmitter placed in one arm thereof, the bridge circuit being connected to a control signal amplifier, in turn connected to an auxiliary amplifier. A phase sensing unit is connected to the auxiliary amplifier and controls the operation of a switching unit which is connected to the control signal amplifier via a final control element which is constituted as a series combination of a magnetic amplifier and a power rectifier. The switching unit controls current flow to the load in order to rebalance the bridge circuit.

3,596,196

ELECTRONIC PROCESS CONTROLLER WITH TRANSIENT POWER INTERRUPTION PROTECTION

John E. Riley, Saugus, Mass., assignor to General Electric Company

Filed May 16, 1969, Ser. No. 825,172
Int. Cl. H03f 1/14
U.S. Cl. 330—11 **2 Claims**



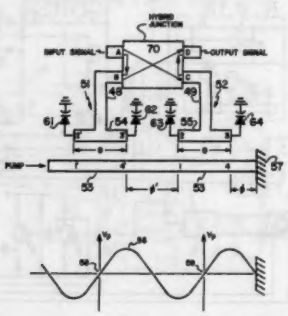
An electronic process controller with transient power interruption protection provided by a voltage-maintaining capacitor connected across the power supply terminals of the voltage amplifier. A blocking diode, in series with the power supply circuit, prevents discharge of the voltage-maintaining capacitor through the power supply circuit during a power outage.

3,596,197

BALANCED PARAMETRIC AMPLIFIERS

Paul Chorney, Providence, R.I., assignor to Microwave Associates, Inc., Burlington, Mass.

Filed Mar. 25, 1969, Ser. No. 810,295
Int. Cl. H03f 7/04
U.S. Cl. 330—4.9 **8 Claims**



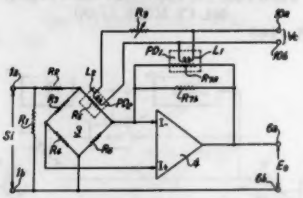
Examples are described of a balanced parametric amplifier employing two loosely-coupled strip conductors, one of which is fed signals via a strip conductor connected at its center. Varactors are connected from each end of the signal-side strip to a ground plane, which completes the idler circuit. The pump standing wave is adjusted to place a null at the signal point and to apply equal amplitude, opposite-phase pump voltages to the varactors.

3,596,198

VOLUME CONTROLLER

Shigeru Niki; Takanobu Hashimoto, and Michio Yoshioka, all of Tokyo-to, Japan, assignors to Kokusai Denki Kabushiki Kaisha, Tokyo-to, Japan

Filed Nov. 1, 1968, Ser. No. 772,660
Claims priority, application Japan, July 9, 1968, 43/47512
Int. Cl. H03f 17/00, 1/36
U.S. Cl. 330—59 **3 Claims**



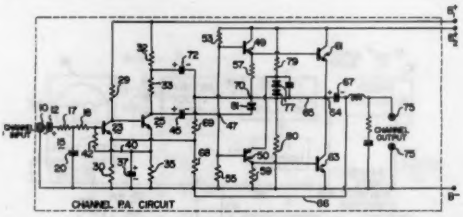
A volume controller for controlling the voltage of at least one signal transmitted in a signal path in matching with the characteristic impedance of the signal path, where the signal is branched to two differential outputs by a branch circuit comprising a bridge circuit of four resistance-arms to amplify the difference between the two differential outputs in a difference amplifier which has a feedback circuit comprising a variable resistor connected between the output of the difference amplifier and one of two inputs of the difference amplifier. The voltage of the output of the difference amplifier can be controlled within an extremely wide level range in response to control of the control means which gangs the variable resistor of the feedback circuit and variable one of the four resistor-arms of the bridge circuit.

3,596,199

TRANSISTORIZED AMPLIFIERS AND PROTECTIVE CIRCUITS THEREFOR

David Hafler, Merion Station, Pa., assignor to Dynaco, Inc., Philadelphia, Pa.

Filed Sept. 9, 1966, Ser. No. 578,408
Int. Cl. H03f 21/00
U.S. Cl. 330—207 P **9 Claims**



A protective circuit for a transistor amplifier having a driver stage and an output stage. The driver stage has a pair of series connected transistors in class B configuration and operates as a phase inverter in response to audio signal applied to a common input point to supply balanced oppositely phased signals to the output stage, the latter comprising a pair of series connected class B transistors having input cir-

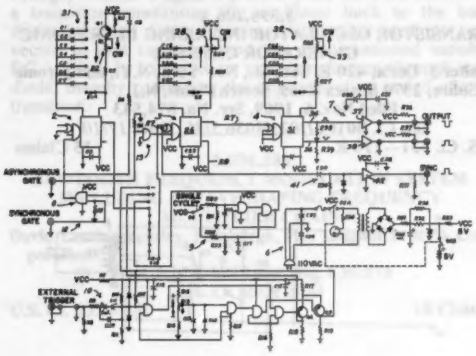
cuits responsive respectively to the oppositely phased signals to supply a substantial replica of the input audio signal to a load connected to the junction of their output circuits. The overall amplifier has unity voltage gain, but provides a power gain with transition form high impedance source to low impedance load. A normally conductive electronic switch in a negative feedback path from output load point to output circuits of driver stage transistors is rendered nonconductive to open the feedback path and thereby prevent continuance of output DC level shifts normally mirroring input DC level shifts which would otherwise lead to self-destructive current multiplication, in the event of overdrive. A further normally nonconductive electronic switch in a path between output load point and input signal point of the overall amplifier is rendered conductive, in that event, to cut off audio signal through the amplifier.

3,596,200

SIMULTANEOUS COMPLEMENTARY OUTPUT PULSE GENERATOR

Delbert C. Fausey, Jr., San Jose, and Russell W. Ralphs, Concord, both of, Calif., assignors to International Water and Control Systems, Ltd., Montego Bay, Jamaica

Filed June 24, 1969, Ser. No. 836,045
Int. Cl. H03k *1/14, 1/16, 1/18*
U.S. Cl. 331—75 **31 Claims**



Presented is a pulse generator that is selectively operable from an AC or a DC source of power. The pulse generator produces a pair of complementary DC coupled outputs. Pulse amplitude is continuously adjustable up to 10 volts, as are pulse width, from 50 nanoseconds to 20 milliseconds, and repetition rate from 1 hertz to 10 megahertz. Rise and fall times are typically 6 nanoseconds when the pulse generator feeds into a 50 ohm load. The pulse generator can feed almost any digital system; it directly drives resistor-transistor, diode-transistor and transitor-transistor logic circuits. From the viewpoint of organization, the apparatus comprises an oscillator, the output from which is connected to a delay control circuit, the output of which is divided into positive and negative going pulses channeled into a pair of output branch circuits. One branch feeds a width control circuit while the other branch feeds a differentiating network, the latter network functioning to provide a reference pulse for comparison with the complementary outputs from an amplifier connected to the two complementary output channels emanating from the width control circuit.

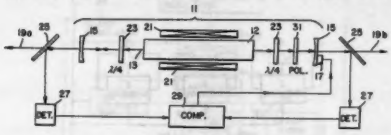
3,596,201

FREQUENCY STABILIZED LASER

Arthur N. Chester, Murray Hill, N.J., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed June 8, 1970, Ser. No. 048,817
Int. Cl. H01s *3/00*
U.S. Cl. 331—94.5 **3 Claims**

A frequency stabilized laser is disclosed in which active laser material exhibiting Zeeman effects is disposed in a resonant laser cavity to which an axial magnetic field is applied for producing Zeeman-splitting, and in which a feedback error signal is applied to adjust the frequency of laser oscillation. Optical means, including quarter-wave plates, are disposed in the laser cavity for insuring that the laser energy propagating in the laser material in a first axial direction is



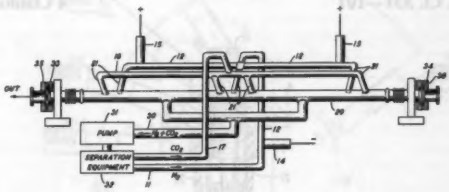
polarized in a first circular polarization sense only, as measured with respect to the direction of the applied magnetic field, and for insuring that the laser energy propagating in the laser material in the opposite axial direction is polarized in the opposite circular polarization sense only, as measured with respect to the direction of the magnetic field.

3,596,202

CARBON DIOXIDE LASER OPERATING UPON A VIBRATIONAL-ROTATIONAL TRANSITION

Chandra K. N. Patel, Chatham, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Continuation-in-part of application Ser. No. 409,682, Nov. 9, 1964, now abandoned , Continuation-in-part of application Ser. No. 474,546, July 26, 1965, now abandoned , Continuation-in-part of application Ser. No. 495,844, Oct. 14, 1965, now abandoned. This application Mar. 28, 1969, Ser. No. 814,510
Int. Cl. H01p *3/22*
U.S. Cl. 331—94.5 **3 Claims**



There is disclosed a laser providing emission of coherent radiation near 10 microns in the far infrared and utilizing transitions between vibrational-rotational levels in carbon dioxide. Also disclosed are beneficial effects from addition of oxygen, water vapor and helium to various forms of such a laser.

3,596,203

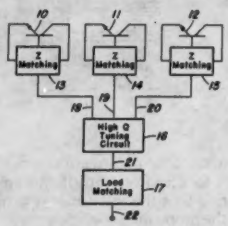
PLURAL TRANSISTOR HIGH FREQUENCY OSCILLATOR

Kazuo Sakamoto, and Ryoji Tamura, both of Tokyo, Japan, assignors to Nippon Electric Company, Limited, Tokyo, Japan

Filed Jan. 2, 1969, Ser. No. 788,577
Claims priority, application Japan, Jan. 4, 1968, 43/423
Int. Cl. H03b *5/18*
U.S. Cl. 331—96 **11 Claims**

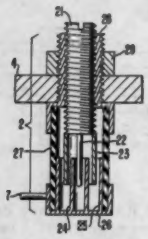
Oscillator apparatus is provided in accordance with the teachings of this invention wherein the total output power as well as the power consumed thereby is equally divided among a plurality of transistor means. The resulting transistorized oscillator apparatus is particularly well adapted for high frequency, high power applications because high frequency transistor means may be appropriately utilized therein without exceeding the rated collector dissipation of such transistor means. According to one embodiment of the present invention, oscillator apparatus is described wherein a plurality of transistors are individually coupled to high Q tuned circuit means through a plurality of impedance

matching means interposed between the inputs to said high Q tuned circuit means and each of said plurality of transistor means. The output of the oscillator apparatus may then be made available to a load through load matching circuit means connected to said high Q tuned circuit means. The loaded Q of the high Q tuned circuit means is selected to be sufficiently above that exhibited by said impedance matching means and said load matching circuit means so that the



frequency of said oscillator means determines the oscillation frequency of said oscillator apparatus and maintains the reactive portion of the overall impedance thereof at a constant value whereby said impedance matching means may be independently adjusted to match the impedance of its respective transistor means to the impedance of high Q tuned circuit means without adversely effecting any of the other transistor means present therein.

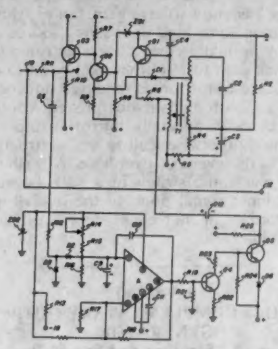
3,596,204
TUNABLE COAXIAL CAVITY SEMICONDUCTOR NEGATIVE RESISTANCE OSCILLATOR
Arthur B. Vane, Menlo Park, Calif., assignor to Varian Associates, Palo Alto, Calif.
Filed July 2, 1969, Ser. No. 838,627
Int. Cl. H03b *7/14*
U.S. Cl. 331—101 **4 Claims**



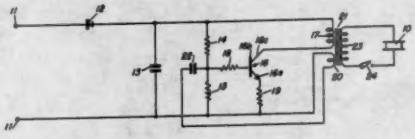
A microwave oscillator circuit is disclosed which employs a series connection of a lumped element capacitor and a semiconductor device capable of exhibiting negative resistance. The capacitance of the capacitor is series resonated with its self inductance to form the principal frequency determinative element of the resonance circuit, whereby broadband tuning is achieved with a relatively simple and thus inexpensive resonator circuit.

3,596,205
LEVEL REGULATOR FOR AN OSCILLATOR
Morris Ribner, Chicago, Ill., assignor to International Telephone and Telegraph Corporation, New York, N.Y.
Filed Aug. 15, 1969, Ser. No. 850,556
Int. Cl. H03b *3/02*
U.S. Cl. 331—109 **7 Claims**

The amplitude level of an oscillator employing a transformer winding as a tank circuit is controlled by varying the gain in the tank circuit. This variation in gain is directly regulated by a transistor circuit connected in parallel with the input winding of the transformer. The level of conduction of the transistor, in turn, is determined by a feedback loop which interconnects the output of the oscillator and the transistor. Variations within the loop determining the level at which a stabilized amplitude is to exist are produced by varying a resistance which, in turn, varies the bias to an operational amplifier within the loop.



3,596,206
TRANSISTOR OSCILLATOR INCLUDING ULTRASONIC GENERATOR CRYSTAL
Walter J. Loria, 420 E. 86th St., New York, N.Y., and Jerome Suhre, 2370 Seneca Road, Scotch Plains, N.J.
Filed Nov. 6, 1969, Ser. No. 874,543
Int. Cl. B01f *11/02;* **H03b** *5/36;* **H04r** *17/10*
U.S. Cl. 331—116 R **15 Claims**

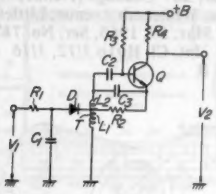


Ultrasonic oscillators having electronic transducers and excitation circuits for the transducers in which the transducers can be disconnected from the oscillator without causing damage. The excitation circuit comprises a primary and a secondary circuit, in which the primary circuit is adapted to be energized with AC and is provided with a rectifier therein for producing a source of pulsating DC for energizing the oscillator system. The primary circuit includes a transistor having a collector-emitter circuit connected through the primary winding of a transformer across the pulsating DC source and having its base connected to a voltage divider, also across the pulsating DC source, such that the transistor is biased nearly to cutoff. A feedback circuit is provided having a coil inductively coupled to the transformer primary and electrically connected to the transistor emitter and through a blocking capacitor to the transistor base. The primary winding and feedback coil are wound with numbers of turns to resonate at a frequency higher than the operating range of the transistor. A secondary circuit comprising a transformer secondary winding connected across the transducer is wound inductively coupled to the primary winding and to the feedback coil such that when introduced into the oscillator circuit physically or by closure of the transducer circuit connection thereto it tunes the oscillator to the resonant frequency of the transducer, which is within the operating range of the transistor. This provides for inherently making the oscillator operative when the secondary is introduced and making it quiescent, i.e., nonoscillatory, when the secondary circuit is removed physically or electrically.

3,596,207
VOLTAGE CONTROL OSCILLATOR

Hiroaki Nabeyama, Higashikoganei-shi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 27, 1970, Ser. No. 6,220
Claims priority, application Japan, Feb. 15, 1969, 44/11236
Int. Cl. H03b 5/12
U.S. Cl. 331—117 R 3 Claims

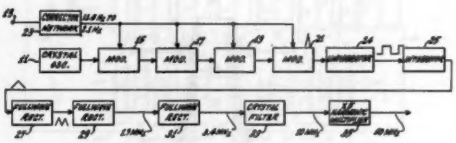


A voltage control oscillator adapted so that the oscillation frequency thereof can be controlled by use of a variable DC voltage, wherein a signal is positively fed from the emitter of a transistor constituting the oscillator back to the base thereof through a transformer and capacitor, a diode connected to said capacitor, and the aforementioned variable DC voltage is imparted to said transformer through said diode, thereby controlling the nonconducting period of said transistor.

3,596,208
SAWTOOTH FREQUENCY MODULATION SYSTEM INCLUDING A WAVESHAPING FREQUENCY MULTIPLIER CHAIN

David Lessing Yerzley, Pittsburgh, Pa., assignor to RCA Corporation

Filed July 8, 1969, Ser. No. 839,978
Int. Cl. H03c 3/00
U.S. Cl. 332—9 R 10 Claims



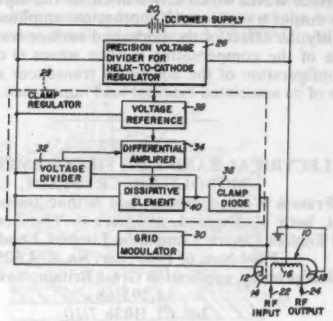
A modulation system includes a serrasoid modulator to provide a relatively high phase-shift capability and a broadband, uptuned frequency multiplier chain to achieve the required amount of frequency deviation when operating at the commercial broadcasting frequencies.

3,596,209
SIDELOBE SUPPRESSION BY PHASE CANCELLATION IN TRAVELING WAVE DEVICES

Dennis J. Picard, Maynard, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed Aug. 1, 1969, Ser. No. 846,760
Int. Cl. H03c 3/34
U.S. Cl. 332—18 6 Claims

A circuit arrangement is disclosed for substantial reduction of spurious sideband noise levels in radio frequency signals by coupling a fraction of the power supply voltage ripple directly to a modulating or control electrode of an electron beam interaction type device for the generation or amplification of radiofrequency electromagnetic energy signals. The introduction of the modulating ripple voltage variations on the applicable electrode has a significant effect on cancellation of the original spurious phase modulation of the radiofrequency signals. Such phase modulation, particularly in traveling wave type devices, is believed to result in the generation of the undesired noise signals, particularly at the

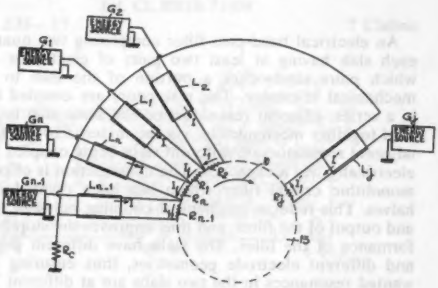


sideband level, by reason of voltage fluctuations in the power supply for the cathode and helix electrodes.

3,596,210
N-INPUT APERIODIC HYBRID COUPLER

Alberto Pimentel, Paris, France, assignor to Thomson-CSF

Filed July 2, 1969, Ser. No. 838,400
Claims priority, application France, July 10, 1968, 158,569
Int. Cl. H01p 5/12
U.S. Cl. 333—8 8 Claims



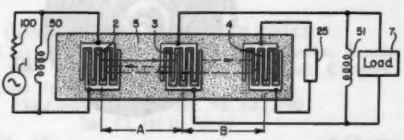
An aperiodic coupler having any number of inputs and comprising the same number of two-wire lines, each associated with a high permeability magnetic core.

Its insertion loss is negligible and it has substantial decoupling between any two inputs.

3,596,211
SURFACE-WAVE FILTER REFLECTION CANCELLATION

Fleming Dias, Chicago, and Adrian J. De Vries, Elmhurst, both of, Ill., assignors to Zenith Radio Corporation, Chicago, Ill.

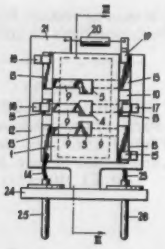
Filed Nov. 6, 1967, Ser. No. 680,654
Int. Cl. H03h 9/00
U.S. Cl. 333—72 10 Claims



Undesired time-delayed and reduced-amplitude output signal components or "ghosts," due to reflected surface

waves arriving at the output transducer of an acousto-electric surface-wave filter, are inhibited or cancelled by providing an additional transducer suitably located to reflect compensating surface waves which arrive at either the input transducer or the output transducer in appropriate amplitude and phase to nullify the effect of the undesired surface waves. The amplitude of the compensating surface waves is controlled by the configuration of the additional transducer and the magnitude of its associated external load impedance.

3,596,212
ELECTRICAL BAND-PASS FILTER EMPLOYING MONOLITHIC CRYSTALS
John Francis Werner, Pinner, and Arthur Joseph Dyer, Watford, both of, England, assignors to The General Electric and English Electric Companies Limited, London, England
Filed Nov. 6, 1969, Ser. No. 874,629
Claims priority, application Great Britain, Nov. 19, 1968, 54,791/68
Int. Cl. H03h *7/10*
U.S. Cl. 333—72 **10 Claims**

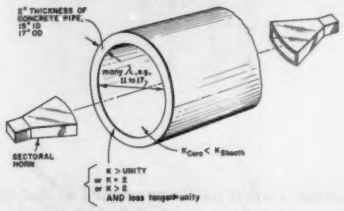


An electrical band-pass filter comprising two quartz slabs each slab having at least two pairs of electrodes each of which pairs sandwiches a portion of the slab to form a mechanical resonator. The resonators are coupled together in a series, adjacent resonators on the same slab being coupled together mechanically, via the material of the slab, and adjacent resonators on different slabs being coupled together electrically, via a capacitor. The construction is effectively a monolithic crystal filter which has been divided into two halves. This reduces mechanical coupling between the input and output of the filter, and thus improves the stop-band performance of the filter. The slabs have different thicknesses and different electrode geometries, thus ensuring that unwanted resonances in the two slabs are at different frequencies. The slabs are mounted back-to-back on a conducting screen which electrically shields the slabs from each other. The filter is designed as a whole to have a Chebyshev-type response.

3,596,213
FILTER UNIT HAVING A CIRCUMFERENTIAL ELECTROSTATIC SHIELD
Walter F. England, Williamstown, Mass., assignor to Sprague Electric Company, North Adams, Mass.
Filed Dec. 18, 1968, Ser. No. 784,716
Int. Cl. H03h *7/04;* **H01g** *3/17*
U.S. Cl. 333—79 **9 Claims**

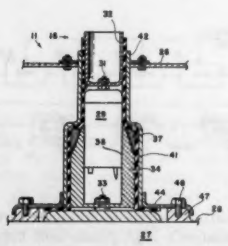
The unit includes an extended foil capacitance section made up of at least a pair of electrodes convolutely wound in a capacitance relation with dielectric spacing material therebetween. A lead extends through the section in connection to one electrode, and the other electrode volutely extends beyond the one electrode to provide an electrostatic shield for the unit.

3,596,214
ELECTROMAGNETIC WAVEGUIDE
Jerome Ira Glaser, 227 Coolidge Avenue, Watertown, Mass., and Lan J. Chu, Whitcomb Avenue, Littleton, Mass.
Filed Mar. 29, 1968, Ser. No. 717,447
Int. Cl. H01p *3/12, 3/16*
U.S. Cl. 333—95 R **5 Claims**



This disclosure deals with a novel electromagnetic waveguide particularly adapted for the transmission of a range of waves from submillimeter through optical wavelengths having a finite-conductivity tube of dielectric constant greater than unity surrounding a medium of lesser dielectric constant and of cross dimension of a value preferably very much greater than the wavelength of the waves propagated along the waveguide.

3,596,215
COAXIALLY MOUNTED IGNITRON
Gamon B. Hayward, P.O. Box 609, Del Mar, Calif.
Filed Dec. 15, 1969, Ser. No. 885,197
Int. Cl. H01p *1/10;* **H01r** *17/18;* **H02q** *15/02*
U.S. Cl. 333—975 **1 Claim**

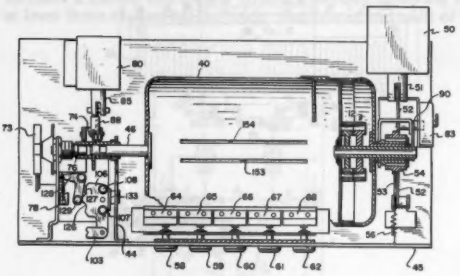


A coaxially mounted ignitron for coupling capacitors to a coaxial transmission line system in parallel relationship.

3,596,216
TUNER MECHANISM
Raymond I. Walsh, Prospect Heights, Ill., assignor to Motorola, Inc., Franklin Park, Ill.
Filed Aug. 7, 1969, Ser. No. 848,237
Int. Cl. H03j *5/06, 5/08*
U.S. Cl. 334—7 **18 Claims**

A pushbutton tuning mechanism for an AM-FM radio receiver includes a cylindrical turret capable of being rotated about a central longitudinal axis to a selected one of several discrete positions, with a linear potentiometer for the AM band and a linear potentiometer for the FM band being mounted for rotation with the turret at each of the positions. Selection of an AM-FM switch engages a clutch mechanism with the drive means for the potentiometers at the selected

position to effect tuning of the radio receiver accordingly. A plurality of pushbuttons are provided, and the depression of a pushbutton causes the turret to be rotated to the position



corresponding to that pushbutton, so that the two potentiometers (AM and FM) associated with that position control the tuning of the radio receiver.

3,596,217

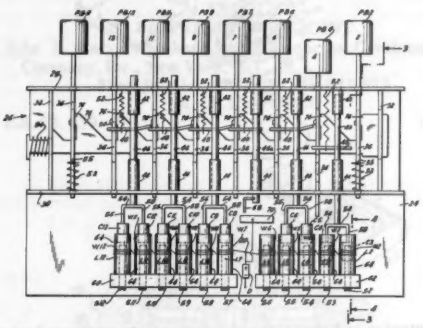
CONTACTLESS VHF TUNER

John Chesney, Roselle Park, and Vincent P. Friberg, Leonia, both of, N.J., assignors to General Instrument Corporation, Newark, N.J.

Filed Aug. 13, 1969, Ser. No. 849,628

Int. Cl. H03j *5/08, 5/32, 3/20*

U.S. Cl. 334—7 **20 Claims**



A tuner comprises a plurality of core-tuned inductors connected in series resonant circuit relationship with a capacitor. A tuning element such as a brass cup is operatively associated with each inductor and is movable between a first position, where it is remote from its associated inductor, to a second position where it is interposed between the inductor core and winding. In that first position the tuning element preferably is of no substantial influence on its associated inductor and in that second position, the tuning element preferably substantially removes that inductor from operative tuning relation with the capacitor.

3,596,218

CIRCUIT BREAKER WITH TRIP INDICATOR

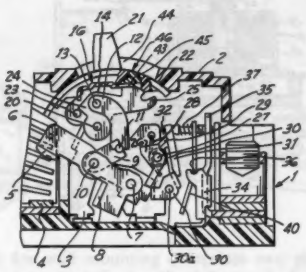
Beryl W. Layton, Cedar Rapids, Iowa, assignor to Square D Company, Park Ridge, Ill.

Filed Nov. 14, 1969, Ser. No. 876,747

Int. Cl. H01h *73/12*

U.S. Cl. 335—17 **8 Claims**

The circuit breaker includes a contact making and breaking assemblage mounted in a housing and having a trip mechanism with a trip lever carrying a indicator. The housing has an opening through which the handle of a manual operator extends. The handle has a dust shield which underlies the opening and which has a window with a lens therein. The lens is exposed for viewing from the exterior of the housing when the operator handle is in ON and TRIPPED positions,



respectively. Upon tripping of the trip mechanism, the trip lever is moved so as to dispose the indicator close to, and in alignment with, the lens and window for indicating the tripped condition. The lens and operator are suitably notched for permitting passage of the indicator into and out of alignment with the window.

3,596,219

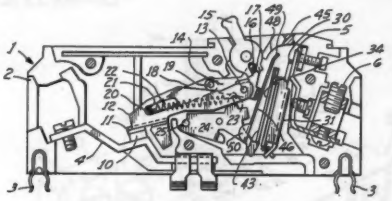
CIRCUIT BREAKER WITH TRIP INDICATOR

Kenneth W. Erickson, Cedar Rapids, Iowa, assignor to Square D Company, Park Ridge, Ill.

Filed Nov. 25, 1969, Ser. No. 879,733

Int. Cl. H01h *71/04*

U.S. Cl. 335—17 **7 Claims**



The circuit breaker has a trip lever which normally is latched by a latch mechanism in an untripped position wherein it maintains the contacts in condition to be opened and closed by a manual operator. The latch mechanism releases the trip lever only upon the occurrence of abnormal current conditions whereupon the contacts are opened and the trip lever is returned to a tripped position. An indicator strip of flexible, nonconducting material having an indicating portion at its outer end is carried by the trip lever. The strip is pushed thereby endwise so that the outer end of the strip engages an interior wall of the housing of the circuit breaker and is guided therealong into alignment with a window in the wall, as the lever moves to tripped position, thereby indicating the tripped condition of the circuit breaker. The indicator strip flexes during its movement to and from trip indicating position to facilitate its proper movement.

3,596,220

COMMON COIL RELAY AND TIMER

James I. Czech, Stevensville, and Donald E. Janke, Benton Harbor, both of, Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich.

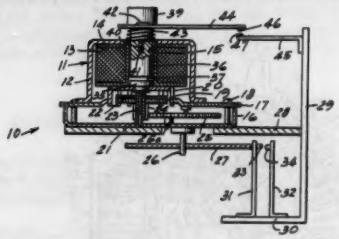
Filed July 14, 1969, Ser. No. 842,090

Int. Cl. H01h *51/18*

U.S. Cl. 335—68 **8 Claims**

A common coil device in a dryer control circuit usable as an electromagnetic device for developing functions of both a

motor and a relay. The relay function is utilized as a circuit continuity function which is normally provided as a shunt to



a momentarily operated starting push button, and the motor function is utilized as a timer for intermittent pulsing of the dryer drive motor during an antiwrinkle cycle.

3,596,221

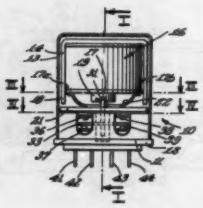
RELAY WITH SPRING ACTUATED ELECTRICAL CONTACT

Anthony N. Grotz, Joliet; Robert L. Lee, Pontiac, and Donald J. Fumagalli, Joliet, all of, Ill., assignors to Liberty Leasing Co., Inc., Shorewood, Ill.

Filed Oct. 2, 1969, Ser. No. 863,042

Int. Cl. H01h *1/50*

U.S. Cl. 335—185 **9 Claims**



An improved electromagnetic relay which includes unique double-acting leaf springs which are connected to contact carriers and which assure positive electrical continuity between the contact. A novel assembly which includes contacts to the coil of the relay is also provided.

3,596,222

PRECISION ELECTRIC TRANSDUCER FOR POSITION MEASURING ON MACHINE TOOLS

Elio Pagella, Torino, Italy, assignor to Ing. C. Olivetti & Co., S.p.A., Ivrea, Turin, Italy

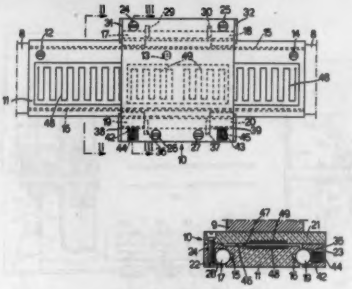
Filed Sept. 9, 1969, Ser. No. 856,298

Claims priority, application Italy, Oct. 9, 1968, 53410/68

Int. Cl. H01f *21/04*

U.S. Cl. 336—129 **5 Claims**

A machine tool position measuring precision transducer or detector comprises a pair of electrical windings secured to a pair of relatively movable members, which are mutually coupled through precision guiding means to maintain the airgap between the windings constant along the facing planes. If the movable member is a slide the guiding means comprises a C-shaped section having a pair of opposite recesses facing a pair of grooves of a guide, a plurality of calibrated cylindrical sliding blocks being interposed between the grooves and the recesses. If the movable member is a rotatable disc the guiding means comprises a plurality of calibrated balls interposed



between the disc and the stationary member, a ring nut exerting an axial thrust on the disc to hold same always in contact with the balls.

3,596,223

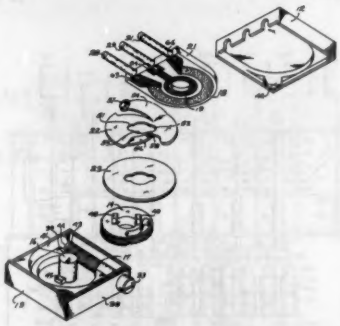
MINIATURE VARIABLE RESISTANCE CONTROL

Ronald L. Stuckey, and Stanley O. Bender, both of Berne, Ind., assignors to CTS Corporation, Elkhart, Ind.

Filed Dec. 23, 1968, Ser. No. 786,319

Int. Cl. H01c *9/02*

U.S. Cl. 338—174 **14 Claims**



A contactor and lead screw driven gear are positioned on a spindle within a housing. Ears on the gear extend along the spindle and interfit with notches in the contact. A seat in the housing fits in a groove formed in the tail end of the lead screw, the screw head compresses a sealing member against a continuous bearing surface on the housing, a spacer limits lead screw movement away from the seat. A bulkhead compartmentalizes the control and inhibits movement of debris and foreign particles into the electrical section of the control. Pullout strength of lead wire terminals anchored in a ceramic base is increased by sandwiching a segment of the terminals between the base and a housing wall.

3,596,224

APPARATUS FOR IMITATING GREAT VALUES OF ELECTRIC RESISTANCE

Anatoly Mironovich Chernov, Buelachenko 19, kv. 24, and Vladimir Dmitrievich Kibenko, Kuznechny pereulok, 97, kv. 12, both of Kishinev, U.S.S.R.

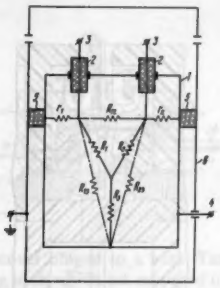
Filed Jan. 14, 1970, Ser. No. 2,805

Int. Cl. H01c *1/02*

U.S. Cl. 338—320 **2 Claims**

An apparatus for imitating a great value of electric resistance is disclosed, which can be connected to an instru-

ment to be tested, having a set of input terminals of any kind, this apparatus comprising at least three resistors connected into a star circuit and mounted inside an electrically conductive housing, this apparatus further comprising an auxiliary housing disposed inside the main one, the auxiliary housing includes a closed electrically conductive body receiving said at least three resistors thereinside; that one of the radii of the



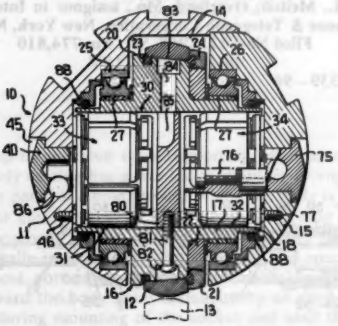
star circuit, which has the electric resistance lower than that of the other radii, is connected to the body of the auxiliary housing; the apparatus further comprises at least three outgoing electrical conductors one of these conductors is electrically connected with the body of the auxiliary housing and the other two conductors extend through separate insulating members mounted on the body of the auxiliary housing.

3,596,225

PIGTAIL ROTARY JOINT

John T. Cary, Markham, Ill., assignor to Continental Can Company, Inc., New York, N.Y.

Filed July 15, 1969, Ser. No. 841,812
Int. Cl. H01r *39/00*
U.S. Cl. 339—5 **7 Claims**



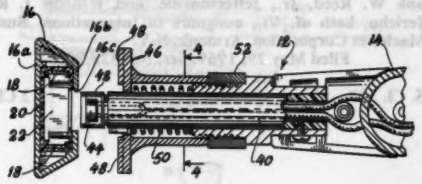
A rotary joint for transferring high amperage electrical energy between a stationary member and a rotary member and particularly relates to a coupling member fixedly carried by the fixed member and having brushes engaged with an internal cylindrical surface on the rotary member. A principal feature of the rotary joint is that the brushes are permanently, yet flexedly, connected to a stationary hub of the coupling member, whereby the only relative moving surfaces are those of the brushes and the internal cylindrical surface and wherein any misalignment or eccentricity between the rotating member and the coupling member is readily accommodated for by the shifting of the brushes.

3,596,226

ELECTRICAL POER TRACK AND SHOE

Jack A. Meltzer, 3398 Fairway Road, Oceanside, N.Y.

Filed Aug. 1, 1969, Ser. No. 846,903
Int. Cl. H01r *9/00, 3/06*
U.S. Cl. 339—21 R **6 Claims**



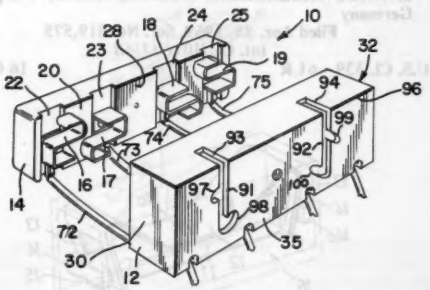
A track for wall mounting comprises two plane-parallel conductors extending the length of the track. A shoe for engagement with the track embodies a narrow elongated extension having pickup contacts at opposite ends thereof adapted for engagement with the track conductors upon rotation of the extension after fitting into the track. A spring-urged locking plate engages the track opening to prevent further rotation of the contact extension. The track enclosure and the locking plate may be conductors to provide a third line for grounded systems.

3,596,227

LAMP RECEPTACLE

Gerald J. Shea, Buffalo Grove, and Hans Ege, Des Plaines, both of, Ill., assignors to Underwriters Safety Device Co., Chicago, Ill.

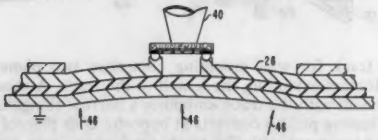
Filed Nov. 15, 1968, Ser. No. 776,178
Int. Cl. H01r *33/08*
U.S. Cl. 339—53 **1 Claim**



A lamp receptacle for use in a lamp socket assembly adapted to receive at least two elongated lamps each of which has two end pins at each end, one side of the receptacle having first and second slots therein, each of the slots being adapted to receive the two end pins at one end of one of the lamps, each of the slots having at least one slot extension connected to the slot and extending to a point spaced from the slot, each of the slot extensions being adapted to receive and hold one of the end pins received in each of the slots when, after the end pins have been inserted into the first and second slots respectively, each lamp is moved in a different direction to place the end pins into the respective slot extensions, and the slot extension of the first slot extends in one direction and the slot extension of the second slot extends in a generally opposite direction. Preferably, the slot extensions are arcuate so that the lamps are rotated in opposite directions to rotate the end pins into the arcuate slot extensions. Also, preferably, end pin retaining means are provided adjacent each slot extension to retain the respective end pins in the slot extension and, if desired, to electrically

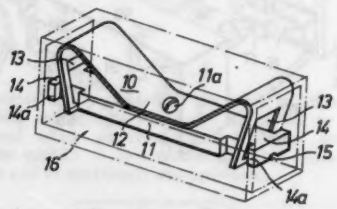
connect the end pins to a source of electric energy when the end pins of each lamp are inserted in the receptacle. The invention also includes a resilient clip comprising a base portion, a spring arm connected at one end to the base portion, and a detent connected to the other end of the spring arm.

3,596,228
FLUID ACTUATED CONTACTOR
Frank W. Reed, Jr., Jeffersonville, and William J. Ryan, Jericho, both of, Vt., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed May 29, 1969, Ser. No. 828,905
Int. Cl. H01r *13/48*
U.S. Cl. 339—59 **12 Claims**



A constant impedance or impedance matched fluid actuated contactor for electrical components, especially integrated circuit semiconductor chips, is provided. The contactor has a flexible dielectric membrane, on one side of which is a resilient, electrically conductive ground plane. On the other side of the dielectric membrane is a plurality of electrically conductive lines adapted to contact the electrical component. The membrane is mounted on a pressure chamber, and a pressurized fluid is utilized to move the dielectric membrane and the electrically conductive lines carried thereon into contacting engagement with the electrical component.

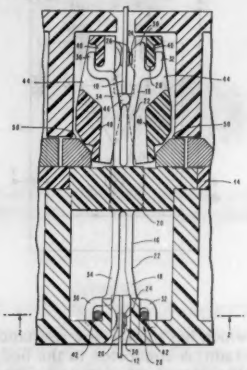
3,596,229
ELECTRICAL CONNECTOR
Wolfgang Hohorst, Minden, Westphalia, Germany, assignor to WAGO Kontakttechnik G.m.b.H., Minden, Westphalia, Germany
Filed Apr. 28, 1969, Ser. No. 819,575
Int. Cl. H01r *13/48*
U.S. Cl. 339—61 R **16 Claims**



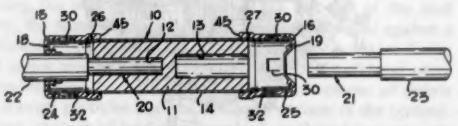
A screwless connecting terminal for electric leads comprising at least one bent clamping spring defining an aperture at one end, a terminal housing in which said clamping spring is located, and a contact plate associated with said clamping spring, characterized by the feature that said clamping spring engages by said aperture round a reduced part of said contact plate and is kept under tension thereby.

3,596,230
CONNECTOR WITH LOAD SHARING CONTACTS
Mario E. Ecker, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Oct. 15, 1969, Ser. No. 866,560
Int. Cl. H01r *13/62*
U.S. Cl. 339—74 **7 Claims**

This specification describes a connector which has a plurality of flexible U-shaped elements each with one arm of the U forming a contact carrying member for making electrical connections to lands on circuit boards inserted into the U and the other arm of the U forming a helper member for aiding in exerting the contact force on the lands. The position of the contact carrying members and the helper members is alternated from one side of the circuit board to the other so that the contacts engage lands on both sides of the circuit board. On each side of the circuit board, the members are positioned against the board while the helper members are spaced away from the board so that helper members and contact members form channels between them on both sides of the board. These channels each contain a floating force member which transfers a portion of the force exerted on the contact carrying members by the lands to the helper members.



3,596,231
INSULATED ELECTRICAL CONNECTOR SLEEVE
Vernon L. Melton, Overland, Mo., assignor to International Telephone & Telegraph Corporation, New York, N.Y.
Filed Nov. 12, 1968, Ser. No. 774,810
Int. Cl. H01r *11/08*
U.S. Cl. 339—96 **3 Claims**



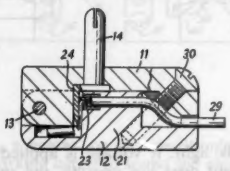
The connector includes a cylindrical socketed body embracingly retained within an insulated sleeve, the sleeve including overhanging portions extending beyond each end of the body. Cylindrical end caps are provided which overfit and embrace the sleeve at each end, the sleeve including a groove latchable onto resilient lugs on the sleeve. Each end cap includes a sealing ring portion on its inner surface which engages the sleeve when the end caps are snapped into place. The end caps include a reinforcing ring defining a push out or rupturable portion which seals the conductor relative to the end cap.

3,596,232

ELECTRICAL CONNECTORS

Joseph Medley, 6, Llantarnam Close, Cwmbran, Monmouthshire, Wales

Filed Dec. 23, 1968, Ser. No. 786,314
Claims priority, application Great Britain, Dec. 29, 1967, 59058/67
Int. Cl. H01r 11/20
U.S. Cl. 339—99 12 Claims



A plug has a cover hinged to a base. Terminals are provided with cutting tools which are mounted on the base.

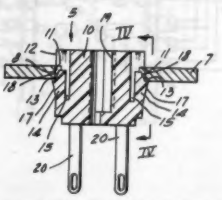
Channels in a block support wires with their ends projecting from a face of the block. When the cover and base are brought together about the hinge the cutting tool moves in front of the fact stripping insulation from the ends of the wires and clamping them against the face.

3,596,233

ELECTRICAL SOCKET WITH SNAP-IN RETAINING MEANS

Albert P. De Vito, Niles, Ill., assignor to Alcon Metal Products, Inc., Chicago, Ill.

Filed July 31, 1969, Ser. No. 846,487
Int. Cl. H01r 13/48
U.S. Cl. 339—128 2 Claims



For snap-in retention on a supporting panel an electrical socket body casting has a fixed stop shoulder to engage one side of the panel at a hole through which the body is inserted, and one or more locking shoulders oppose the stop shoulder in panel receiving spaced relation on a respective snap finger cast integrally in one piece with the body and spaced from the adjacent portion of the body to enable flexing of the finger toward the body upon deflection by an edge defining the hole during mounting of the socket and until the finger has cleared through the hole and flexes away from the body to move the locking shoulder into locking position, and having access to said finger through the stop shoulder.

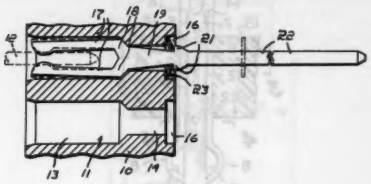
3,596,234

FEMALE CONTACT ASSEMBLIES

Joseph A. Sapienza, Norwood, and Robert J. Butler, Malden, both of, Mass., assignors to Connector Technology Corporation, North Billerica, Mass.

Filed Nov. 12, 1968, Ser. No. 774,774
Int. Cl. H01r 9/00
U.S. Cl. 339—214 2 Claims

A female contact assembly is disclosed comprising a housing member having passages extending therethrough with each passage having a socket portion opening through one face of the housing member. Each female contact has a fork part at one end, a shank, and an intermediate portion and is inserted through a passage to bottom its fork in the socket



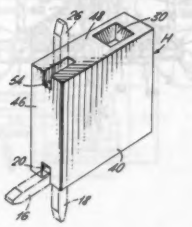
portion thereof, the shank being then exposed on the other face as are barbs by which a retainer is caught to anchor the contact against any appreciable movement in a withdrawing direction.

3,596,235

ELECTRICAL CONTACT ELEMENT AND AN ELECTRICAL CONNECTOR AND AN ELECTRICAL CONNECTOR ASSEMBLY COMPRISING THE CONTACT ELEMENT

Lucas Gerardus Christinus Teurlings, Frederik Hendriklaan, Netherlands, assignor to AMP Incorporated, Harrisburg, Pa.

Filed Aug. 12, 1969, Ser. No. 849,402
Claims priority, application Netherlands, Aug. 22, 1968, 68-11958
Int. Cl. H01r 9/08; H05k 1/00
U.S. Cl. 339—217 R 14 Claims



The tines of a uniplanar sheet metal fork receptacle for a tab or post are rectangularly bent so that the effective lever length of each arm exceeds the length or height of a housing in which the receptacle is disposed. The tendency of the housing dimensions to restrict the range of tab and post shapes and sizes that the receptacle can accommodate is thus reduced.

3,596,236

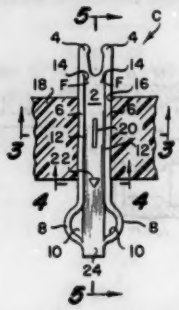
DEFORMABLE ELECTRICAL CONNECTOR FOR CLAMPING CONDUCTORS

Bernard Edward Shlesinger, Jr., 3906 Bruce Lane, Annandale, Va.

Filed Apr. 3, 1969, Ser. No. 812,988
Int. Cl. H01r 5/08, 7/20
U.S. Cl. 339—266 R 38 Claims

A deformable electrical connection for clamping conductors and the like comprising a body member having a pair of normally rigid nonmovable spaced opposed jaws formed therein and in which at least one of the jaws is deformable in a direction towards the other of the jaws. The body member

supports a lever against one of the jaws for applying a closing force to the one jaw to deform it in the direction of the other jaw when the closing force is applied to the one jaw to thereby permanently clamp a conductor between the jaws.

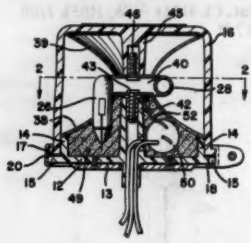


3,596,237

STROBOSCOPIC ANTI-COLLISION BEACON

Hugh Philip Barber, Jr., Springfield, and Paul H. Greenlee, Urbana, both of, Ohio, assignors to Grimes Manufacturing Co., Urbana, Ohio

Filed June 18, 1969, Ser. No. 834,401
Int. Cl. F21g 3/00
U.S. Cl. 340—25 4 Claims



An anticollision stroboscopic aircraft beacon employs an annular flash tube lamp and a circularly continuous reflector. The reflector is divided into separate upper and lower portions. The lower reflector portion is positioned in close proximity to the lamp and forms the ionizing electrode for the lamp. The reflector portions form a parabola in section, and the lamp is located at the focus of the parabola to direct the light outwardly with the most intense portion of the pattern in a horizontal plane covering 360°. A gap or space between the upper and lower portions of the reflector permits light from the back side of the lamp to pass through the gap and contribute to the output intensity on the opposite side.

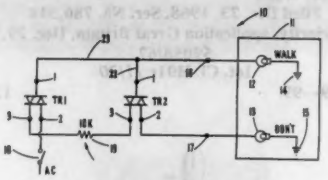
3,596,238

FAIL-SAFE WALK-DON'T WALK SIGNAL

Gregory Siklos, Bronx, N.Y., assignor to The Marbelite Company, Inc., Brooklyn, N.Y.

Filed Aug. 8, 1968, Ser. No. 751,130
Int. Cl. G08g 1/097
U.S. Cl. 340—46 8 Claims

Fail-safe electrical circuit arrangements are provided which are particularly useful in connection with Walk-Don't Walk pedestrian traffic control signals to prevent a Walk light from being actuated should the Don't light indication be defective. The circuit arrangements comprise first and second semiconductor bilateral switches, a gate circuit and a Don't and a Walk light. If voltage is applied to both lights and the Don't light does not operate, the switches prevent the illumination of the Walk light.

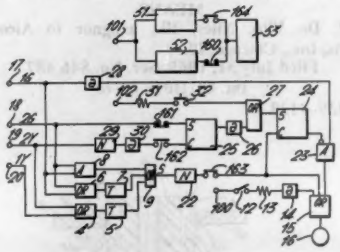


3,596,239

TRAFFIC SIGNAL CONTROL SYSTEM

Kimio Hata, and Yoshinori Maruta, both of Kyoto, Japan, assignors to Omron Tateisi Electronics Co., Vkyo-Ku, Kyoto, Japan

Filed Dec. 9, 1968, Ser. No. 782,065
Claims priority, application Japan, Dec. 12, 1967, 42-79,645
Int. Cl. G08g 1/097
U.S. Cl. 340—46 4 Claims



A system is provided for controlling the operation of traffic control systems at an intersection in the event of certain malfunctions in signal operation. A normally operative traffic signal controller is continuously monitored and in the event of malfunction, a malfunction signal is produced which causes deactivation of the normally operative signal controller and causes a normally inoperative controller to assume operation of the signals for a predetermined period of time, after which the normally operative controller is reactivated. However, if the malfunction signal recurs within the first operation cycle after reactivation of the normally operative controller, then it is again deactivated and the reactivating means is disabled.

3,596,240

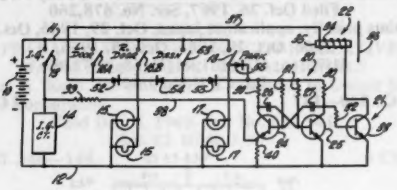
ALARM CIRCUIT

Carl E. Atkins, Montclair, and Edward Lennon, North Arlington, both of, N.J., assignors to Wagner Electric Corporation

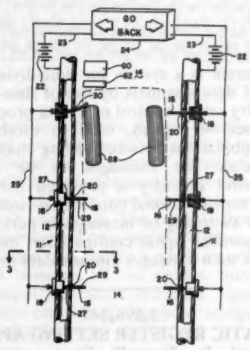
Filed Apr. 11, 1968, Ser. No. 720,556
Int. Cl. B60q 5/00; G08b 3/10
U.S. Cl. 340—52 D 2 Claims

An alarm circuit for passenger vehicles sets off an audible signal only when the ignition switch is open, the parking lamps are turned on, and the door switch is closed (door open). The circuit may include a free running multivibrator in which case there are no make and break contacts to

produce a spark. The alarm may be arranged to operate only when the left door is opened. Other auxiliary facilities such as a radio set, a heater, or air conditioning motor may be added to the parking lamps to sound the alarm.



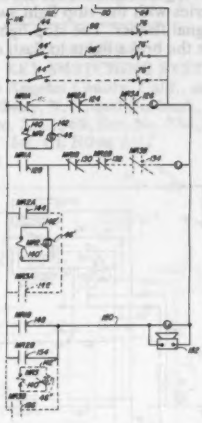
3,596,241
SIGNALLING APPARATUS AND METHOD FOR CAR WASHES AND THE LIKE
Maurice Migneault, 69 Bowers St., Nashua, N.H.
Filed Feb. 4, 1969, Ser. No. 796,340
Int. Cl. B60s *13/00*
U.S. Cl. 340—61 **7 Claims**



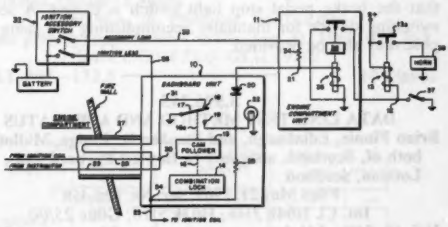
Indicating guiding and signalling means, useful in conjunction with a vehicular pathway, for indicating to the driver how to maneuver the vehicle to center it in the pathway. More particularly, the indicating means is comprised of a continuous elongated conducting means along each side of said pathway and a series of individually actuatable, movable, switch contacts successively placed therealong, which movable switch contacts can detect the malpositioning of a vehicle's wheels but will not react to trivial contact with the vehicle. The most advantageous embodiments of the invention allow a quick and easy replacement of damaged resilient switch contact arms and do not depend on the mass of the vehicle for activating the signalling means.

3,596,242
SPEED WARNING SYSTEM
Thomas W. Skweres, Lisle, Ill., assignor to Ross and White Company, Wheeling, Ill.
Filed Jan. 14, 1969, Ser. No. 790,982
Int. Cl. B60q *1/00*
U.S. Cl. 340—62 **7 Claims**

The disclosure describes a signal system for drive-through plural-station wash racks and the like providing progressive visible or audible signals relative to the speed of the vehicle so that the driver is alerted to control the vehicle speed within optimum or recommended values for greatest washing efficiency of the rack. In one embodiment a green light indicates to the driver that the vehicle is progressing from station to station at the recommended speed, an amber light alerts the driver that the vehicle is exceeding the recommended speed and a red light and audible signal indicates continued excessive speed. Other embodiments are disclosed.



3,596,243
TWO-UNIT ANTITHEFT DEVICE
Stephen W. Leibholz, Rydal, Pa., assignor to Analytics Incorporated
Filed Mar. 28, 1969, Ser. No. 811,472
Int. Cl. B60r *25/00*; **G08b** *13/00*
U.S. Cl. 340—64 **8 Claims**

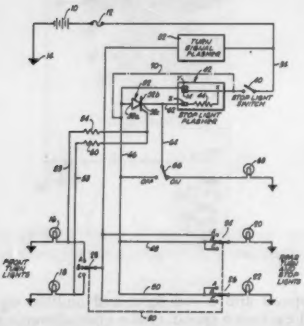


An electronic anti-theft device for an automobile including a dashboard unit and an engine compartment unit. The dashboard unit is equipped with a combination lock mechanism which in the undialed position is operative to short out both the automobile ignition coil and the distributor. The dashboard unit also includes an armored cable which houses a folded over ignition wire and wires from both the distributor and ignition coil. The engine compartment unit includes three separate but related embodiments, each of which includes means for enabling the automobile horn to provide an audible alarm as long as the combination lock is not correctly dialed or an attempt is made to disable the dashboard unit and to steal the automobile.

3,596,244
STOP AND TURN LIGHT SIGNALING SYSTEM
Bernhardt J. Litke, 219 East Blair St., Lyons, Kans.
Filed Mar. 21, 1968, Ser. No. 714,818
Int. Cl. B60q *1/38*, *1/44*
U.S. Cl. 340—67 **7 Claims**

A visual signaling system for use on motor vehicles to signal stops and turns made by the vehicle. The system is electrical circuitry which includes a battery, and further includes a brake pedal stop light switch, and a turn signal flasher connected in series with the battery, and in parallel

with each other. A common selector switch is connected in both the turn signal flasher circuit and the stop light switch circuit to selectively place either of a pair of lights in the stop signal switch circuit, or alternately, another combination of lights in the turn signal flasher circuit. A stop light flasher is connected in series with the stop light switch and in parallel with the turn signal flasher. The stop light flasher is a device which will cause the brake lights to flash on and off when the



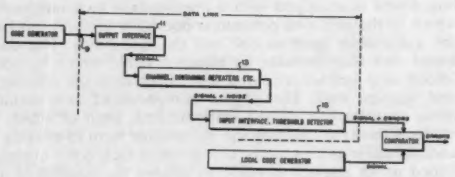
brake pedal is depressed to close the stop light switch, but will also permit instant lighting of the stop lights at that time. A switching device is provided for automatically inactivating the stop light flasher at such times as the turn signal flasher circuit is closed to energize the turning lights, thus permitting at least one stop light to burn steadily at this time, provided that the brake pedal stop light switch is closed. A second switching device for manually accomplishing the same purpose may also be provided.

3,596,245

DATA LINK TEST METHOD AND APPARATUS

Brian Finnie, Edinburgh, and Stephen R. Hodge, Midlothian, both of, Scotland, assignors to Hewlett-Packard Ltd., West Lothian, Scotland

Filed May 21, 1969, Ser. No. 826,458
Int. Cl. H04b *3/46*; H03k *5/18*; G08c *25/00*
U.S. Cl. 340—146.1 **6 Claims**



A controllable shift register is used in testing circuitry which measures statistical error rates and synchronization loss rates on digital data links such as are used for transmission of pulse-code modulated (PCM) signals by injecting into the data link a digital test signal having accurately known statistics and then comparing the resultant received signal with a test signal generated at the receiver for providing the desired error information.

3,596,246

TIME-DIVISIONAL DATA SWITCHING SYSTEM

Yukio Nakagome, Tokyo-to; Kitsutaro Amano, Yokohama-shi, and Yasuo Fukata, Tokyo-to, all of, Japan, assignors to Kokusai Denshin Denwa Kabushiki Kaisha, Toky-to, Japan

Filed Oct. 26, 1967, Ser. No. 678,260
Claims priority, application Japan, Oct. 29, 1966, Oct. 29, 1966, Oct. 29, 1966, Oct. 29, 1966, 41/71166; 41/71167; 41/71168; 41/71169
Int. Cl. H04q *9/00*
U.S. Cl. 340—147 **7 Claims**

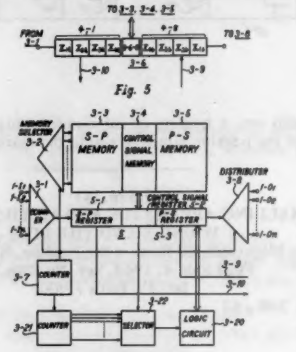


Fig. 5

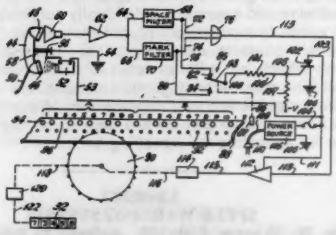
Disclosed herein is a system for time-divisional switching of messages of data channels by use of time-divisional connection circuitry under control of a data processor, in which exchange-connection signals, used to establish respective connected combinations between calling channels and called channels precede the messages to be communicated. Character control circuitry is provided between the data processor and time-divisional connection circuitry so that the time-divisional switching of messages is performed for each character of parallel signal configuration messages without the insertion of such messages into the data processor.

3,596,247

AUTOMATIC REGISTER SETTING APPARATUS

Alton B. Eckert, Jr., Norwalk, Conn., assignor to Pitney-Bowes, Inc., Stamford, Conn.

Filed Apr. 24, 1968, Ser. No. 723,680
Int. Cl. H04l *23/00*; H04m *11/08*
U.S. Cl. 340—147 **13 Claims**



Apparatus for setting from a remote location the descending monetary register of a postage meter to increase the amount of register credit against which the meter will continue to issue postage. Upon request, telephone communication is established between a central agency and the remote meter, whereupon a coded signal is dispatched to the meter which automatically compares the incoming signal with correspondingly coded information stored in the meter. Upon completion of receipt of a proper signal a driving mechanism is actuated to drive the monetary register in an ascending

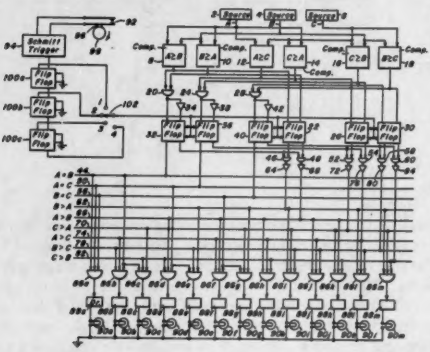
direction by a predetermined amount, whereas an improper signal disables the driving mechanism to prevent further operation until the meter is opened, inspected and manually set.

3,596,248

APPARATUS FOR COMPARING THE RELATIVE MAGNITUDE OF ELECTRICAL SIGNALS

William A. Kolb, Forest Hills, Pa., assignor to United States Steel Corporation

Filed Dec. 5, 1969, Ser. No. 882,541
Int. Cl. H04q *3/00*
U.S. Cl. 340—149 **6 Claims**



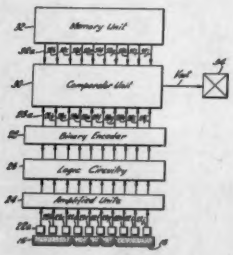
A group of electrical signals, whose relative magnitude is to be determined, are connected to pairs of comparators in all possible combinations of pairs of signals. Gating circuits connected to each pair of comparators provide an output indicating the one of three possible relations which exist between each pair of signals. The outputs from each gating circuit are interconnected to a series of gates, one for each possible combination, to provide a single output showing the specific relation between all the signals. Storage elements prolong the output for short duration signals. Circuitry periodically selects one set of signals to compare in rapidly changing sets of signals.

3,596,249

CREDIT CARD READER FOR SENSING DENSITY OF RESILIENT MATERIAL

William T. Tierney, Fishkill, N.Y., assignor to Texaco Inc., New York, N.Y.

Filed Dec. 31, 1969, Ser. No. 889,477
Int. Cl. H04q *3/00*
U.S. Cl. 340—149 **7 Claims**



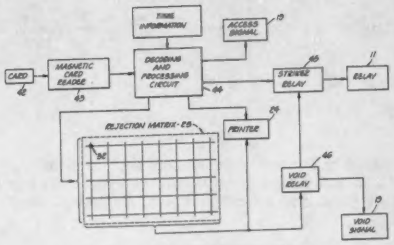
Methodology and apparatus for sensing embossed numbers on such articles as credit cards and the like. The sensing is accomplished by a resilient pad having a uniform density of suspended material or an embedded layer of material which is either conductive, magnetic, reflective or radioactive and sensors behind the resilient pad which are sensitive to the substance of the material and fulfill their recognition upon the embossed numbers compressing the resilient pad and increasing the conductive, magnetic, reflective or radioactive density in the area of the embossments only.

3,596,250

CODED KEY SWITCHING SYSTEM

Bruce S. Sedley, Los Angeles County, Calif., assignor to H. O. Bohme, Inc., Westbury, N.Y., and Burbank, Calif.

Filed Dec. 23, 1968, Ser. No. 786,338
Int. Cl. H04q *1/32*
U.S. Cl. 340—167 R **10 Claims**



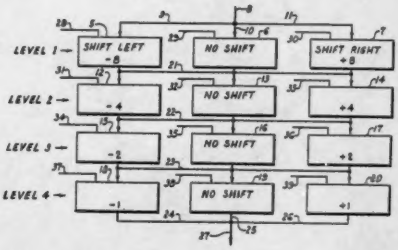
The present invention relates generally to a switching system, and, more particularly, to such a system for controlling a plurality of electrical circuit apparatus by a coded key in the general form of a card.

3,596,251

LOGICAL SHIFTING DEVICE AND METHOD OF SHIFTING

John S. Buchan, and Frank P. Turpin, both of Ottawa, Canada, assignors to Northern Electric Company Limited, Montreal, Quebec, Canada

Filed Mar. 26, 1968, Ser. No. 716,034
Claims priority, application Canada, Jan. 31, 1968, 011,203
Int. Cl. G06f *7/00*; **G11c** *19/00*
U.S. Cl. 340—172.5 **10 Claims**



A logical shifting device having a plurality of levels, each of which includes a left shift logical unit, a no-shift logical unit and a right shift logical unit interconnected by logical circuitry so as to permit a binary word input comprising N+1 binary bits to be shifted left or right by up to N places. During shifting, a binary word passes once through each level and thus the time taken for a shifting operation is constant for all magnitudes of shift.

3,596,252

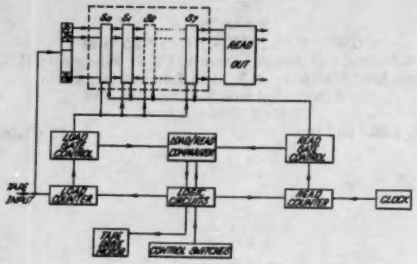
AUTOMATIC READ-OUT SYSTEMS

David Anthony Dilwyn Duncan, Stevenage, England, assignor to British Aircraft Corporation Limited, London, England

Filed Dec. 11, 1968, Ser. No. 783,017
Int. Cl. G06f *5/06*, *11/04*
U.S. Cl. 340—172.5 **5 Claims**

This is an automatic test equipment system which is tape controlled and in which the characters on the tape represent

commands or signals which are sent to the equipment under test at predetermined intervals to initiate and control certain test sequences. The time interval between two commands



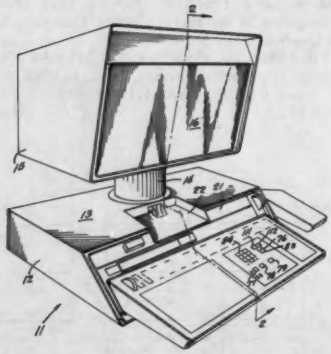
may be critical to the test sequence and therefore the tape is read into a memory bank from which the characters can be read out at fixed time intervals which are independent of tape speed.

3,596,253

TWO-STAGE RETRIEVAL MICROFILM READER

Robert W. Ruth, and Bennett S. Le Bow, both of Washington, D.C., assignors to DSI Systems, Inc., Rockville, Md.

Filed Apr. 8, 1969, Ser. No. 814,235
Int. Cl. G11b *13/00*; G03b *23/00*
U.S. Cl. 340—172.5 **7 Claims**



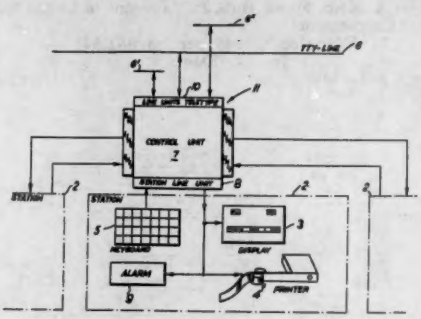
A microfilm reader of the cartridge type utilizing spots on the film frames of the cartridge in cooperation with photosensitive detectors to mintor the movement of the frames. The photosensitive detectors control the drive mechanism of the cartridge in a manner such that the mechanism may be operated in accordance with a coded input signal corresponding to a particular film frame desired to be viewed. The input signal may be applied either locally from a keyboard, or from a remote source. The signal is coded to correspond to the desired film frame number. The microfilm reader is provided with circuits to compare the input signal data with data derived from the previous movement of the film frames and to then drive the film to the frame corresponding to the input signal data. The microfilm reader may be set to operate either in the above mode, or in an incremental mode wherein the film is moved in either a forward direction or a reverse direction in increments of a selected definite number of film frames.

3,596,254

DATA PROCESSING WITH CONTROLLED INPUT

Wilbur H. Highleyman, Mountain Lakes; Anthony V. Deja, Towaco; Willard A. Dix, Chester; Joesph P. Shaw, Ringwood, and Edmund R. Niedzwiecki, Haledon, all of, N.J., assignors to Data Trends, Inc., Parsippany, N.J.

Filed Apr. 30, 1969, Ser. No. 820,362
Int. Cl. G06f *3/04*
U.S. Cl. 340—172.5 **53 Claims**



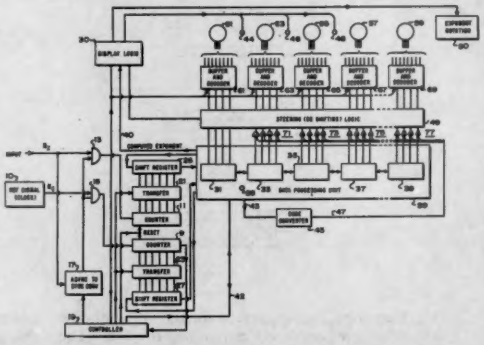
Disclosed herein is a data processing system for generating and organizing input data according to a predetermined format and for coupling the resultant message to a transmission network. The illustrative system employs one or more input terminal stations, each equipped with data and function keyboards, format guidance indicators, a local hard copy printer and an alarm system. The system also includes a control unit constituting a digital computer which controls the overall system including message transmission, coordination of the stations, and the operations at each station such that (a) the operator is directed to follow a predetermined format defined by the operations of the format guidance indicators, (b) the functions produced by key manipulation are controlled, (c) the message to be transmitted is printed for visual verification before transmission, and (d) departures from the format actuate an alarm system and preclude message transmission. The system also includes line units which interface the control unit with the stations and with the transmission network.

3,596,255

DISPLAY BLANKING APPARATUS

Gilbert A. Reeser, Sunnyvale, and Gary B. Gordon, Cupertino, both of, Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed July 9, 1969, Ser. No. 840,244
Int. Cl. G06f *3/14*
U.S. Cl. 340—172.5 **3 Claims**



The frequency of an unknown signal is displayed as the arithmetic combination of counts taken during a gate period

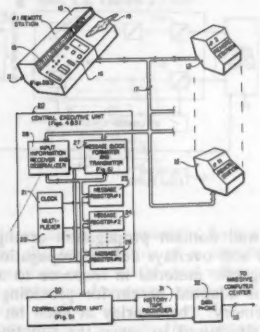
of clock pulses and of pulses of the unknown frequency. The arithmetic combination of the counts typically provides a display quantity to a number of significant digits that exceeds the accuracy with which the counts are taken. Logic circuitry detects and blanks the significant display digits to the right of a decimal point which exceed the basic accuracy of the measurements.

3,596,256

TRANSACTION COMPUTER SYSTEM HAVING MULTIPLE ACCESS STATIONS

Norman Alpert, Scarsdale, N.Y.; Marvin Felcheck, Monsey, N.Y., and Wallace Kirschner, Trumbull, Conn., assignors to Pitney Bowes-Alpex, Inc., Danbury, Conn.

Filed Aug. 8, 1969, Ser. No. 848,466
Int. Cl. G06f *15/02, 15/24*
U.S. Cl. 340—172.5 **20 Claims**



A time-sharing system for entering into a central data processing unit information relating to transactions separately conducted at multiple remote access stations, and for processing and storing portions of this input information and returning portions of the processed data as messages to the remote stations, part of which data is displayed and/or printed. The returned messages also include indications to the operator of the remote station as to the next step that he should perform toward completing entry of the transaction. Each remote station is polled and enabled to transmit information to the central unit during a time slot in each complete cycle of time slots, but every remote station has its display refreshed with processed display data transmitted during every time slot to every remote station from the central unit, the display data always being composed into message blocks at the central unit prior to transmission thereof to the remote units. The time slots are brief and the rate at which the remote units are polled is very high as compared with the rate at which an operator can physically enter one input character, and therefore each remote unit when polled transmits to the central unit during its time slot only a single encoded data character and/or encoded program instruction, and the computer processes this fragmentary information accumulated during successive time slots, and over the succession of a large number of time-slot cycles it assembles and associates the complete data relating to the diverse transactions being simultaneously performed at many access stations. The drawings and specification provide an illustrative embodiment in which the remote stations are sales-point retail registers operated by clerks delivering sales data to a store's central processing unit and receiving back messages for displaying and printing out sales slip information.

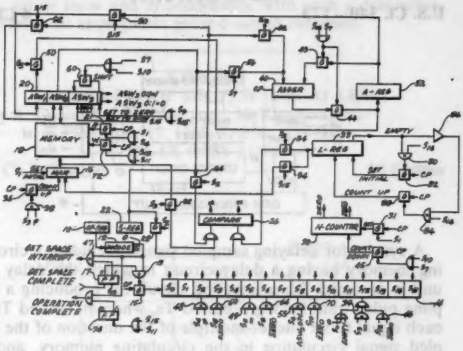
3,596,257

METHOD AND APPARATUS FOR ALLOCATING SMALL MEMORY SPACES TO A COMPUTER PROGRAM

Rajani Manibhai Patel, Arcadia, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed Sept. 17, 1969, Ser. No. 858,748
Int. Cl. G06f *9/06*
U.S. Cl. 340—172.5 **12 Claims**

An arrangement for allocation of small spaces in an addressable memory for use by a computer program. Blocks of memory are each subdivided into a predetermined number of equal areas. The base address of a block, the size of the subdivided areas in the block, and the availability status of each area in the block are specified in a status word associated with the block. Each block has its own status word stored in



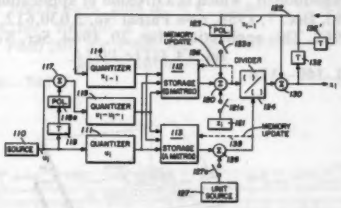
memory Whenever a particular size are a is needed in memory, the status words are examined to locate a block having an area of the required size available. If no area of the required size is available, a new block is established and a status word defining the new block is loaded into memory.

3,596,258

EXPANDED SEARCH METHOD AND SYSTEM IN TRAINED PROCESSORS

William C. Choate, and Michael K. Masten, both of Dallas, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 30, 1969, Ser. No. 889,241
Int. Cl. G06f *7/02*
U.S. Cl. 340—172.5 **10 Claims**

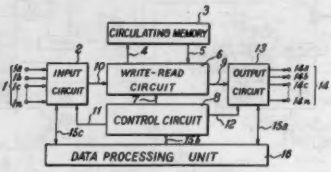


Operation of a trained processor beyond an untrained point where successive time sampled sets of level dependent signals stored in a tree storage array at successive memory locations along with a trained response for each set at a subsequent memory location form a data base to locate and extract a trained response to subsequent sets encountered following completion of training. A test set forming an untrained point is sequentially compared with each trained set stored in memory to establish and store a difference function relative to each trained set. Logic means selects as the trained response for the untrained point the trained response from those trained responses for which the trained sets have the same minimal difference function and which satisfies a predetermined decision criteria.

3,596,259
DELAY SYSTEM OF SAMPLED SIGNALS USING A CIRCULATING MEMORY

Hiroichi Teramura, Tokyo-to; Naohiko Hattori, Tokyo-to, and Sumitoshi Ando, Ohmiya-shi, Saitama-ken, all of, Japan, assignors to Kokusai Denshin Denwa Kabushiki Kaisha, Tokyo-to, Japan

Filed Dec. 17, 1968, Ser. No. 784,428
Claims priority, application Japan, Dec. 18, 1967, 42/80602
Int. Cl. G11c 21/00
U.S. Cl. 340—173 4 Claims

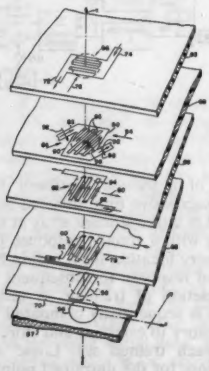


A system for delaying sampled signals including a circulating memory having a delay circuit in which the delay time unit is designed Td; a sampling circuit for producing a sampling pulse train having a period Ts, wherein Td and Ts are each equal to an integer-multiple of the duration of the sampled signal circulating in the circulating memory, and the delay time unit Td is not equal to an integer-multiple of the sampling period Ts; a read-right circuit for entering and withdrawing sampled pulses to and from the memory; an output circuit for receiving signals readout of the memory; and a control timing circuit for generating pulses to operate these various circuits. The sampled signals which are delayed by the circulating memory are derived from the circulating memory at least at predetermined times at each of which an integer-multiple of the delay time unit Ts and an integer-multiple of the sampled period Ts coincide with each other. The sampled signals delayed may be derived from the circulating memory at each of the predetermined times only, or at plural times a predetermined period from one of the predetermined times and the just succeeding one of the predetermined times.

3,596,260
MAGNETIC STORAGE DEVICE

Charles D. Olson, Saint Paul, Minn.; Arthur V. Pohm, Ames, Iowa, and Sidney M. Rubens, Saint Paul, Minn., assignors to Sperry Rand Corporation, New York, N.Y.

Continuation of application Ser. No. 20,195, Apr. 5, 1960, now abandoned, which is a division of application Ser. No. 626,945, Dec. 7, 1956, now Patent No. 3,030,612, dated Apr. 17, 1962. This application Mar. 20, 1964, Ser. No. 353,623
Int. Cl. G11c 11/14
U.S. Cl. 340—174 27 Claims

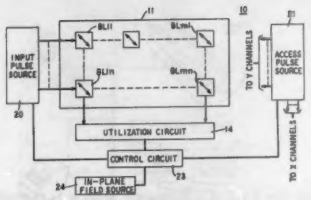


A magnetic storage device including a thin layer of magnetic material and first, second and third conductors which are inductively coupled to the layer. The first and second conductors intersect at parallel portions which define a memory area in the plane of the layer while the third conductor picks up signals induced therein by a change of magnetization of the memory area when it is affected by the first and second conductors.

3,596,261
SINGLE WALL DOMAIN SWITCHING ARRANGEMENT

Anthony J. Perneski, Martinsville, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Nov. 17, 1969, Ser. No. 877,087
Int. Cl. G11c 11/14, 11/42, 21/00
U.S. Cl. 340—174 TF 7 Claims

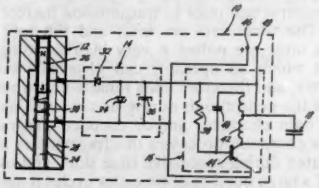


A single wall domain propagation arrangement wherein magnetically soft overlays define propagation channels in a sheet of magnetic material in response to a reorienting in-plane field is adapted herein for providing a "coincident-domain" memory. The overlay at each bit location of the memory is structured to serve the function of a latching switch. A domain pattern advanced along one of coordinate domain propagation accessing channels is rerouted to the coordinate channel when the associated switch is closed.

3,596,262
TELEMETRY MEASURING APPARATUS

William L. Rollwitz, and Harvey S. Benson, both of San Antonio, Tex., assignors to Southwest Research Institute, San Antonio, Tex.

Filed Jan. 8, 1968, Ser. No. 696,370
Int. Cl. G08c 19/10, 19/38
U.S. Cl. 340—200 10 Claims



An electrical measuring and telemetry apparatus for monitoring physical conditions of objects. A magnetic power generator having parts movable in response to the motion of an object to generate electrical power and in which the condition of the object such as temperature, stress, strain or pressure is measured by an electrical transducer to vary the signal output from a transmitter which receives the generated power and transmits electrical signals in response to the condition being measured. A temperature measuring apparatus having a power source, an electrical transmitter having a tank circuit for transmitting electrical signals whose frequency is controlled by the tank circuit, and a temperature sensitive capacitor positioned adjacent the object and electrically connected in the tank circuit thereby varying the transmitted signals in proportion to the temperature of the object. A power generator having a coil and magnet movable relative

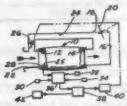
to each other to generate electrical power in response to the motion of the object. A power generator having first and second members one of which is fixed and the second of which moves relative to the fixed member, the first member being a circular toothed disc and the second member including two soft iron pieces having a pickup coil wound thereon and a permanent magnet positioned between the soft iron pieces whereby a voltage is generated in the coil when the coil moves relative to the toothed disc. A magnetic power generator for providing a power source in response to rotating, oscillating, or reciprocating movement of an object.

3,596,263

ICING CONDITION DETECTING APPARATUS

Michael F. Ciemochowski, Warren, Mich., assignor to Holley Carburetor Company, Warren, Mich.

Filed Sept. 23, 1968, Ser. No. 761,556
Int. Cl. G08b *21/00*
U.S. Cl. 340—234 **8 Claims**



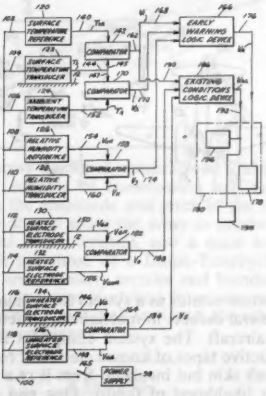
An icing condition detecting apparatus, by means of transducers, compares the temperature of a monitored surface against the temperature of an established reference temperature and further compares dew point against the temperature of said monitored surface in order to determine if such psychrometric parameters indicate the existence of conditions conducive to frost or ice formation on said monitored surface.

3,596,264

MULTICHANNEL FROST ICE AND SNOW DETECTING DEVICE

Michael F. Ciemochowski, Warren, Mich., assignor to Holley Carburetor Company, Warren, Mich.

Filed Mar. 13, 1969, Ser. No. 806,882
Int. Cl. G08b *21/00*
U.S. Cl. 340—234 **12 Claims**



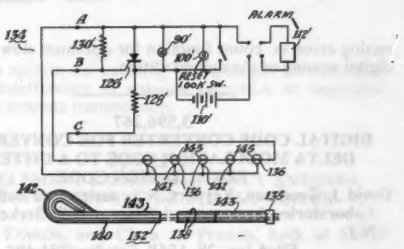
A device for both anticipating and detecting the formation and presence of frost, ice or snow on a particular surface employs signal-producing sensing means to sense the temperature of the surface, the temperature of the atmosphere, the atmospheric humidity, as well as the presence of either free water, frost, ice or snow. The signals produced in response thereto are compared to certain established reference values indicative of freezing temperature, a predetermined difference between atmospheric temperature and surface temperature, a preselected relative humidity as well as relative electrical conductivity of free water, frost, ice or snow in order to logically determine if the formation of frost or ice is anticipated and in accordance with such determination create an appropriate first output response and to in accordance with the same signals logically determine whether it is merely free water which is being sensed or if it is actually frost, ice or snow and in accordance with such a determination create an appropriate second output response.

3,596,265

TAMPER-PROOF SHOPLIFTING ALARM

Percy A. Garland, 559 Shaw Ave., McKeesport, Pa.

Filed June 17, 1968, Ser. No. 737,567
Int. Cl. G08b *21/00*
U.S. Cl. 340—280 **10 Claims**



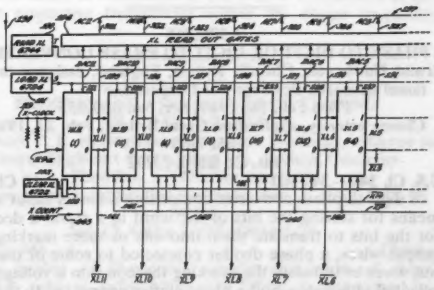
I disclose a shoplifting alarm comprising a housing, a plurality of circuit jacks mounted on a wall of said housing, a number of loop segments attachable to said jacks for completing an alarm circuit including alarm means and being contained within said housing, means at the other end of each of said loops for securing said loops to articles of displayed merchandise, and means for preventing substantial separation of said loop segments from said housing.

3,596,266

NUMERICAL CONTROL SYSTEM AND METHOD

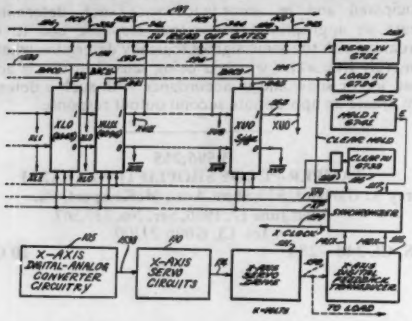
Kenneth Leonard Slawson, Depew, and Robert Joseph Kellner, Cheektowaga, both of, N.Y., assignors to Houdaille Industries, Inc., Buffalo, N.Y.

Filed July 12, 1968, Ser. No. 744,490
Int. Cl. H03k *13/02*
U.S. Cl. 340—347 **4 Claims**



A control system having a stored program digital computer for transmitting commands to digital servos for a punch press

with digital to analog converter circuitry providing for a digitally selected null zone, digital control of the slope of the analog error vs. count function for optimum slow down, and digital sensing of the null condition.

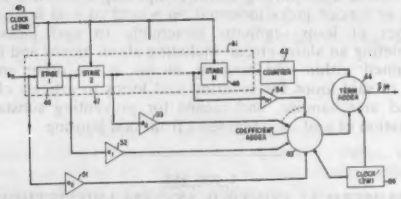


3,596,267

DIGITAL CODE CONVERTER FOR CONVERTING A DELTA MODULATION CODE TO A DIFFERENT PERMUTATION CODE

David J. Goodman, Keyport, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Jan. 28, 1969, Ser. No. 794,494
Int. Cl. H03k *13/32*; **G06f** *5/00*
U.S. Cl. 340—347 DD **7 Claims**



A delta modulation to other permutation code signal converter comprises a shift register and up-down counter in series. The counter produces a permutation code output indicative of the running history of the delta modulation input, while the shift register, through weighted coefficient multipliers, produces correction signals to reduce the noise content of the counter output.

3,596,268

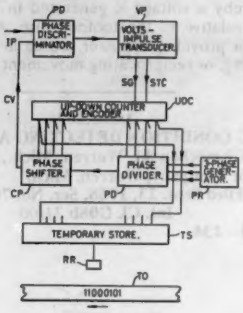
PHASE TO DIGIT OR DIGIT TO PHASE CONVERTER

Ernest Howbrook, Cheadle Hulme, England, assignor to National Research Development Corporation

Filed Feb. 18, 1969, Ser. No. 800,055
Claims priority, application Great Britain, Feb. 22, 1968, 8557/68
Int. Cl. H03k *13/02*
U.S. Cl. 340—347 AD **10 Claims**

A digit to phase converter comprising a binary input word, means for storing the bits of the word in a store, a decoder for the bits to translate them into one or more markings on output wires, a phase divider connected to some of the output wires to translate the marking thereon into a voltage of a selected phase step, and a phase shifter connected to the output of the divider to shift the said output phase by a smaller amount than each phase step.

The invention can also be embodied in a converter operating to translate an input phase voltage into a binary code by comparing the input voltage in a phase discriminator with a variable reference phase voltage derived from a fixed phase voltage, varying the variable phase voltage by means of a stepped phase divider and phase shifter till the input and reference phases coincide, registering the phase divider and phase shifter steps in a counter, encoding the counter position, and storing the binary result until required to transmission or recorded.

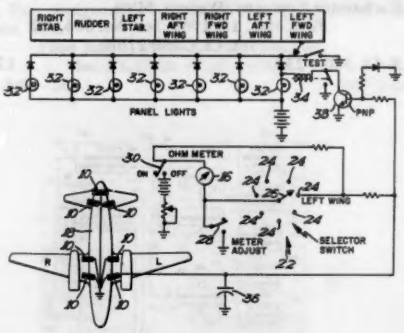


3,596,269

STRUCTURAL DEFECT MONITORING DEVICE

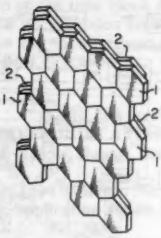
Richard H. Laska, Rosemount, Minn. 55068

Filed Oct. 25, 1968, Ser. No. 770,531
Int. Cl. G08b *21/00*
U.S. Cl. 340—421 **10 Claims**



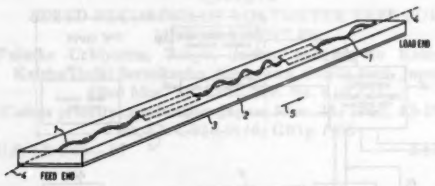
This invention relates to a system for a detecting and monitoring structural defects in mechanical structures such as the skin of an aircraft. The system comprises a group of elongated conductive tapes of known electrical resistance bonded to the aircraft skin but insulated from it at a point which has a history or likelihood of failure. One end of the group of tapes is electrically grounded while the other is electrically connected to a resistance comparing or measuring device, as for example, an ohmmeter. A visual or audible warning device is provided in the form of a light or buzzer including a solenoid holding circuit to hold it on once energized. Thus when a crack or tear occurs in the aircraft skin the warning light or buzzer is energized and a reading of the ohmmeter shows the extent of damage by the degree of resistance change.

3,596,270
MICROWAVE ABSORBING WALL ELEMENT
Sakae Fukui, 234, Higashi Okubo 2-chome, Shinjuku-ku, Tokyo, Japan
Continuation-in-part of application Ser. No. 699,522, Jan. 22, 1968, now abandoned. This application Sept. 24, 1969, Ser. No. 865,231
Int. Cl. H01q 17/00
U.S. Cl. 343—18 A 3 Claims



A microwave absorbing wall element to be used, for example, in an anechoic chamber, which element comprising a polygonal ferrite material plate formed to have complemental stepped edges in section at its periphery, and a conductive plate lined on the back surface of the ferrite material plate. As the elements are butted together with each other, the stepped edges of adjacent butted elements will engage with each other so as to block joint slits along each periphery.

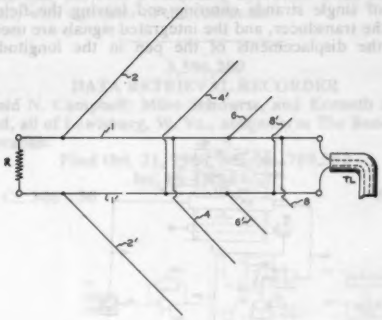
3,596,271
MICROWAVE ANTENNA HAVING AN UNDULATING CONDUCTOR WITH VARIABLE PITCH AND AMPLITUDE
Michael Frank Cosslett, Maldon, Essex; Robert Frost, Wells, Somerset, and Kenneth Owen Rossiter, Wells, Somerset all of, England, assignors to Electric & Musical Industries Limited, Hayes, Middlesex, England
Filed May 6, 1969, Ser. No. 822,143
Claims priority, application Great Britain, May 9, 1968, 22,140/68
Int. Cl. H01q 1/36
U.S. Cl. 343—731 3 Claims



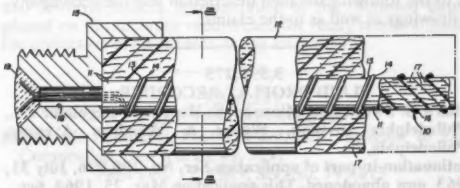
The antenna array disclosed comprises an undulatory conductor which is capable of transmission and reception of energy, in which the amplitude and pitch of the undulations are progressively altered along the array to produce an array having directional characteristics, and a main lobe to side lobe ratio, which are those of a Dolph-Tchebycheff array. The undulations are circularly arcuate and blended into one another and the conductor is etched from one copper layer of a strip of low loss copper clad laminate, the other layer of which forms a ground plane.

3,596,272
SECONDARY LOBE AND GHOST-REDUCTION ANTENNA TRANSMISSION-LINE SYSTEM
Isaac S. Blonder, Claycourt, N.J., assignor to Blonder-Tongue Laboratories, Inc., Newark, N.J.
Filed June 24, 1969, Ser. No. 835,979
Int. Cl. H01q 11/10
U.S. Cl. 343—792.5 4 Claims

This disclosure deals with a novel antenna apparatus embodying a nonradiating transmission line section feeding active antenna dipole elements and the like for operation over a multifrequency range, wherein use is made of resistance connected at a critical location across the nonradiating transmission line section for enabling the reduction of secondary lobes and interference in antenna reception or equivalent problems in antenna transmission.



3,596,273
MULTIELEMENT RADIO-FREQUENCY ANTENNA STRUCTURE HAVING HELICALLY COILED CONDUCTIVE ELEMENTS
Richard J. Francis, and Clara A. Francis, both of 11855 Broad St., Pataskala, Ohio
Filed Sept. 25, 1967, Ser. No. 670,142
Int. Cl. H01q 1/38, 1/40, 9/32
U.S. Cl. 343—873 9 Claims

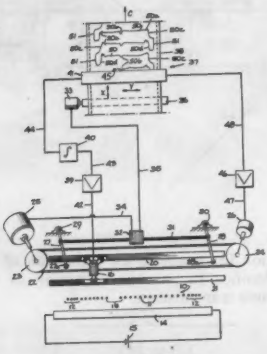


A multielement antenna structure is provided which may be fabricated with a predetermined characteristic impedance for impedance matching purposes. The several elements comprise elongated electrical conductors formed in a helix and encased in a supporting body formed from a hardenable resin matrix. A broadband frequency characteristic is obtained through appropriate selection of conductor diameters that will result in resonance of the several conductors at different respective frequencies within the design frequency band.

3,596,274
PROCESS AND APPARATUS FOR TESTING FILAMENTARY WEBS
Eberhard P. E. Heringhaus, Pfungstadt, Germany, assignor to Uniroyal Englebert Deutschland AG, Aachen, Germany
Filed Feb. 5, 1970, Ser. No. 8,844
Claims priority, application Germany, Feb. 7, 1969, P 19 05 994.0
Int. Cl. G01n 21/32; G01d 5/26
U.S. Cl. 346—1 6 Claims

The quality of filamentary multistrand webs of sheet material, such as weftless tire cord fabric, is determined by moving the web longitudinally of itself over a full width elongated light source while scanning a photoelectric transducer reciprocally across the opposite surface of the web to provide an output which varies in accordance with transmitted light density variations. A marking pen of a strip chart recorder is

reciprocally traversed across the chart in synchronism with the traversing movements of the transducer, and the chart is longitudinally advanced stepwise for a predetermined short distance each time the transducer reverses direction. The output of the transducer is integrated to eliminate the influence of single strands entering and leaving the field of view of the transducer, and the integrated signals are used to control the displacements of the pen in the longitudinal



direction of the chart. The result is a graphic picture of the web which may be used as a permanent record of its quality and characteristics.

The foregoing abstract is not to be taken either as a complete exposition or as a limitation of the present invention, and in order to understand the full nature and extent of the technical disclosure of this application, reference must be had to the following detailed description and the accompanying drawings as well as to the claims.

3,596,275

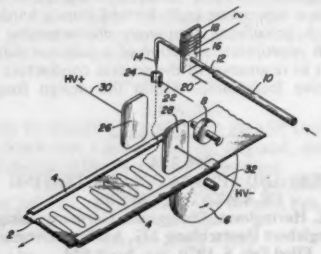
FLUID DROPLET RECORDER

Richard G. Sweet, C/O Minneapolis-Honeywell Regulator Co., Philadelphia Division, Wayne & Wendrim Avenues, Philadelphia, Pa.

Continuation-in-part of application Ser. No. 298,996, July 31, 1963, now abandoned. This application Mar. 25, 1964, Ser. No. 354,659

Int. Cl. G01d *15/18*

U.S. Cl. 346—1 **33 Claims**



A direct writing signal recording system which writes on a record medium by projecting a stream of writing fluid in the form of a succession of uniformly spaced droplets. The droplets are charged electrostatically in accordance with instantaneous signal values and then deflected electrostatically in accordance with the charges carried by the droplets. Droplets may be directed to intercepting means whereby droplets so directed are not deposited on the record medium.

3,596,276

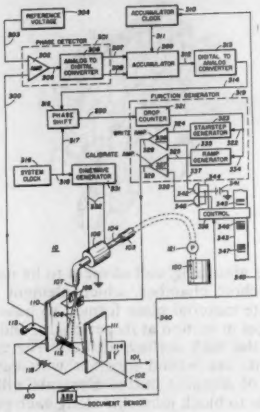
INK JET PRINTER WITH DROPLET PHASE CONTROL MEANS

Kenneth T. Lovelady, and Robert B. McJohnson, both of Dallas, Tex., assignors to Recognition Equipment Incorporated, Dallas, Tex.

Filed Feb. 10, 1969, Ser. No. 798,052

Int. Cl. G01d *18/00*

U.S. Cl. 346—1 **6 Claims**



A charging voltage applied to ink droplets discharged from the nozzle of an ink-jet printer is controlled by varying the phase of the charging voltage placed upon a droplet in dependence upon the time-phase relationship between the droplet and the charging voltage.

3,596,277

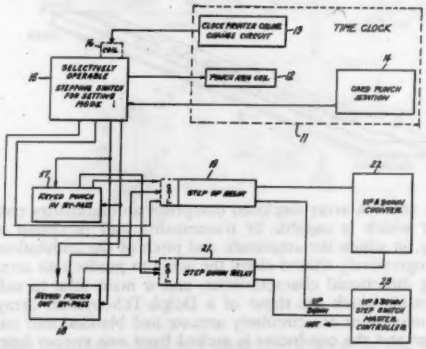
CONTROL CIRCUIT FOR TIME CLOCK AND MASTER COUNTER

David A. De Witt, and Ralph W. De Witt, both of 68 Spring Ave., Latham, N.Y.

Filed Jan. 31, 1968, Ser. No. 705,262

Int. Cl. G07c *1/00*

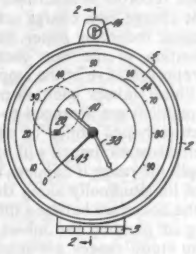
U.S. Cl. 346—14 R **27 Claims**



A master time clock system is described which employs a card-actuated time recording mechanism for producing punch-in or punch-out printed time records on an actuating card inserted in the time recording mechanism. According to the invention, selectively operable stepping switch means are provided for selectively placing the time recording mechanism in a punch-in, a punch-out or no-punch mode of operation, and time operated control means are provided for selectively actuating the stepping switch means at predetermined times to place the system in a selected one of its operating modes. In addition, ancillary, bypass, punch-in and punch-out means are coupled to and control the time recording mechanism for punching-in and punching-out workers at

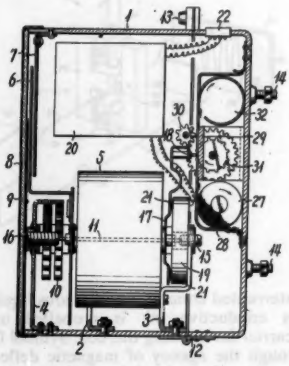
other than the predetermined punch-in and punch-out times at the discretion of a supervisor irrespective of the operating mode in which the time recoding mechanism has been placed by the time operated control means. The system also includes a reversible counter coupled to and controlled by the punch-in and punch-out time recording mechanism of the time clock for deriving an accurate count of the total number of people working at any given time during a work day. A master accumulated time counter controller is also coupled to and controlled by the punch-in and punch-out time recording mechanism of the time clock for deriving an accurate count of the total accumulated time of the total number of people working in the facility during a prescribed work period up to a given time of readout.

3,596,278
RECORDING PAPER INDICATING MECHANISM
Masanori Kobayashi, Tokyo, Japan, assignor to Kabushiki, Tokyo, Japan
Filed Nov. 15, 1968, Ser. No. 776,061
Claims priority, application Japan, Nov. 17, 1967, 42/73856
Int. Cl. G01d *18/00*
U.S. Cl. 346—17 **7 Claims**



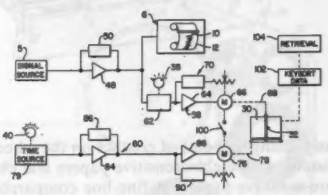
Mechanism for visually indicating the amount of the unused or unrecorded portion of the recording paper utilized in a tachograph to record measurements taken by the tachograph and for indicating when the recording paper should be replaced.

3,596,279
SPEED RECORDER OF VOLTMETER TYPE FOR MOTOR VEHICLES
Taisuke Uchiyama, Tokyo, Japan, assignor to Kabushiki Kaisha Daiki Sersakusho, Neyagawa, Osaka Pref, Japan
Filed Mar. 26, 1969, Ser. No. 810,731
Claims priority, application Japan, Mar. 28, 1968, 43-19722
Int. Cl. G01d *9/16;* **G01p** *1/06*
U.S. Cl. 346—17 **2 Claims**



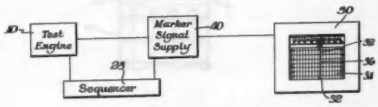
A speed recorder for a motor vehicle is provided with a voltmeter operated by the voltage proportional to the speed of the motor vehicle. On the rotary shaft of the voltmeter is mounted a recording needle of dotting type. By means of an annular electromagnet which is actuated by a multivibrator, the supporting member of the needle is vibrated so that the needle may perform a recording operation when swung integrally with a pointer of the voltmeter.

3,596,280
DATA RETRIEVAL RECORDER
Donald N. Campbell; Miles Schwartz, and Kenneth K. Konrad, all of Lewisburg, W. Va., assignors to The Bendix Corporation
Filed Oct. 21, 1968, Ser. No. 769,352
Int. Cl. G01d *9/26*
U.S. Cl. 346—30 **5 Claims**



There is disclosed a novel recorder and recording system described as applied to recording data from a source such as a gas chromatograph. Normal recording of the data in such an illustrative application is accomplished using a conventional strip chart recorder having a constant feed rate of "X" inches per minute. In this disclosure a recorder is used having a record card of predetermined coordinate height and length, representing time, and signal amplitude. This recorder is equipped with a variable time scale adjustment wherein data of practically any time duration may be placed within the predetermined time coordinate length. Mechanical search and retrieval indicia representative of the recorded data is placed on the recorder record card for ready retrieval from a file collection of such cards at any later time.

3,596,281
FUEL TEST RECORDER
Eugene H. Lombardi, Port Chester, N.Y., assignor to Ethyl Corporation, New York City, N.Y.
Filed Feb. 17, 1969, Ser. No. 799,615
Int. Cl. G01d *9/32*
U.S. Cl. 346—34 **1 Claim**

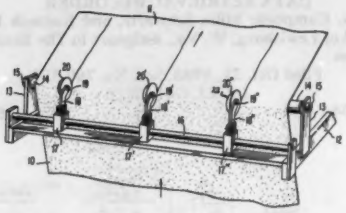


Trace indicator such as chart recorder is arranged to automatically make different mutually distinguishable types of traces under the influence of a special marker signal, to indicate two different types of measurements are being made. A single pen on a chart recorder is in this way used to simultaneously make a trace of test results on different gasolines and identify the individual gasolines.

3,596,282
MARKING MECHANISM INCLUDING A THIN-EDGED WHEEL STYLUS FOR ELECTROSENSITIVE RECORDER
Jerry A. Stegenga, Coral Gables, Fla., assignor to Milgo Electronic Corporation, Miami, Fla.
Filed Feb. 20, 1968, Ser. No. 706,906
Int. Cl. G01d *15/06, 9/10*
U.S. Cl. 346—74 ES **5 Claims**

This invention provides a sturdy mechanism to replace a fine wire stylus for recording data points or a continuous line

on a coated moving strip as it passes over a backing element, comprising a thin-edged wheel mounted for free rotation about an axis combined with a linear backing element over which the strip is transported. Advancement of the strip over a thin backing element rotates the wheel to provide a continuously changing point of contact on the wheel and is especially useful with electrosensitive papers and certain types of pressure-sensitive papers. A fine line comparable to the best fine wire stylus practice is achieved, and the wheel stylus has greatly increased rigidity, durability and service life.



3,596,283

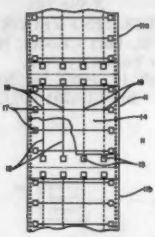
DEVICE FOR THE VISUAL PRESENTATION OF ELECTRONIC INTELLIGENCE

Michael F. Baumann, Reading, and Thomas S. Loane, Wyomissing, both of, Pa., assignors to Wyomissing Corporation

Continuation-in-part of application Ser. No. 738,171, June 19, 1968, now abandoned. This application Feb. 4, 1969, Ser. No. 796,455

Int. Cl. G01d *15/06, 15/02;* **G11b** *9/00*

U.S. Cl. 346—74 E **1 Claim**



A system for recording information onto a sheet of material is provided by forming a plurality of closely spaced electrical junctions that are normally nonconductive but that selectively may be raised to a conductive state. The passage of current through the junctions is effective to alter certain properties of the junction such as electrical, mechanical or chemical, and enable the recording or retrieval of information.

The junctions are defined by a series of linear conductors located in a first plane, a second series of linear conductors angularly oriented to the first conductors located in a second plane parallel to the first plane, and a material having different electrical properties, preferably a dielectric material, positioned between the first and second planes.

Pressure forces generated variously by mechanical, chemical or electromagnetic energy are utilized to program the junctions.

3,596,284

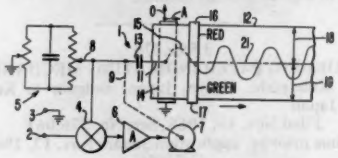
ELECTROGRAPHIC APPARATUS EMPLOYING PLURAL INKERS OF DIFFERENT COLORS FOR SEPARATING SIGNAL LEVELS OR CHANNELS ACCORDING TO COLOR

Renn Zaphiropoulos, Los Altos, Calif., assignor to Varian Associates, Palo Alto, Calif.

Continuation of application Ser. No. 612,540, Jan. 30, 1967, now abandoned. This application Nov. 20, 1969, Ser. No. 871,706

Int. Cl. G01d *15/06, 9/10;* **G03g** *13/10*

U.S. Cl. 346—74 **4 Claims**



An electrographic recorder is described which lays down a line of electrostatic charge on a charge retentive surface of a strip of electrographic recording paper. In one embodiment, the transverse position of the line charge image on the recording strip is representative of the amplitude of the signal being recorded. Plural inkers each dispensing a different color of charged pigment are arranged to ink charge images within separate strip-shaped zones of the recording strip. Thus, the inked electrostatic image will have a color dependent upon the amplitude range it happens to correspond to at any position taken longitudinally along the strip. The transverse position of the boundary between different colors is adjustable by sliding or pivoting the inkers, whereby the different colored amplitude ranges are made adjustable. In a second and third embodiment a multichannel recorder or printer is described wherein the signals corresponding to the different channels are each recorded in their own separate strip-shaped zone of the recording paper. Each separate recording zone has its own separate inker with pigment of a different color than that of its neighbors.

3,596,285

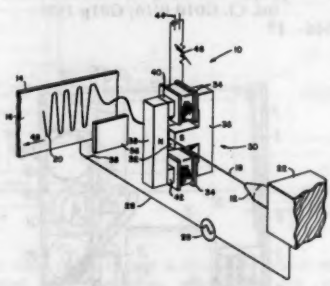
LIQUID METAL RECORDER

Johannes F. Gottwald, Park Ridge, Ill., assignor to Teletype Corporation, Skokie, Ill.

Filed July 11, 1969, Ser. No. 840,947

Int. Cl. G01d *15/18*

U.S. Cl. 346—75 **6 Claims**



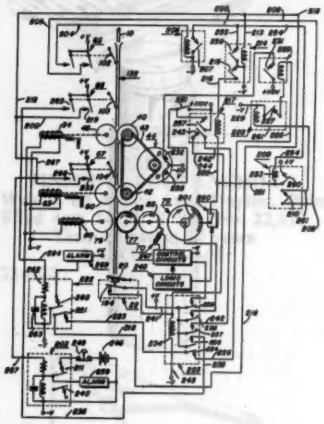
An uninterrupted stream or continuous liquid bridge of an electrically conductive ink is propelled under pressure against a carrier for marking thereon. Symbol formation is effected through the agency of magnetic deflection resulting from interaction of a pair of magnetic flux fields of relative variable intensities. A first of the flux fields is induced about the ink stream by passing a current through it as it travels across the span between the nozzle from which it has been ejected to the carrier; and the second field is disposed about

the first. In a preferred embodiment, the ink is an electrical conductor, being a metal or metallic composition with a melting point, such that it will flow at printing temperature but will solidify as it contacts the carrier. By providing an impervious or imperforate endless carrier, for example, of metal fabrication a formed symbol may be removed therefrom to enable reuse of the carrier and metal salvage.

3,596,286
PUNCHING TIME RECORDER

James T. Coliz, New Providence; Carl A. Inpyn, Kinnelon, and Robert R. Meola, Parsippany, all of, N.J., assignors to Calculagraph Company, Township of East Hanover, N.J.

Filed July 31, 1969, Ser. No. 846,509
Int. Cl. G07c *1/08*
U.S. Cl. 346—86 **39 Claims**

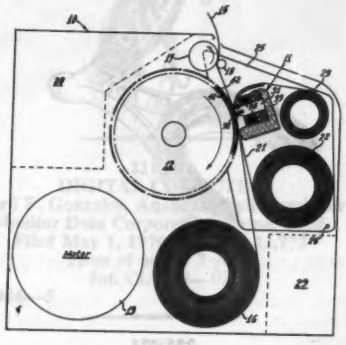


A time recorder for punching employee arrival and departure times into a data processing card, which apparatus comprises a card positioner, a photoelectric card reader, a time generator, logic circuits and a punching mechanism. The card positioner aligns the card to the current day and time period, the card reader reads into the logic circuits employee work shift and lunch period identification which has been prepunched in the card, and the time generator introduces into the logic circuits current time information. Upon compiling such information, the logic circuits make a decision and cause actuation of the punching mechanism, after which the card positioner ejects the card.

3,596,287
ELECTROMAGNETIC SIGNAL RECORDER OF THE PRESSER BAR TYPE

Austin G. Cooley, Reno, Nev., assignor to Litton Systems Inc., Beverly Hills, Calif.

Filed June 26, 1969, Ser. No. 836,817
Int. Cl. G01d *15/00*
U.S. Cl. 346—101 **10 Claims**



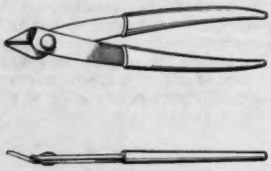
A signal recorder provided with a print or presser marking bar for marking a record sheet or blank backed up by a rotating member supporting a helical anvil. The signals to be recorded such as facsimile signals are impressed upon an electromagnetic structure adjacent the presser bar, the magnetic structure embodying U-shaped cores so oriented that the magnetic flux which controls the bar, constituting an armature for the electromagnets, has forward and return paths to the rotating helix member which pass through the body of the bar. The pressure between the presser bar and the helix when the electromagnetic structure is energized by a signal marks the recording blank. The presser bar may be formed with alternate sections of different magnetic characteristics to provide flux paths of higher permeability at the poles of the signal-responsive magnets.

DESIGNS

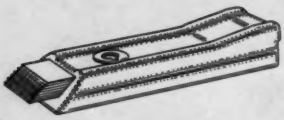
JULY 27, 1971

221,272
TOOTHBRUSH
Constance K. Splaine, 69 Elm St., Danvers, Mass. 01923
Filed Jan. 27, 1970, Ser. No. 21,107
Term of patent 7 years
Int. Cl. D4—*02*
U.S. Cl. D4—24

221,273
WIRECUTTERS
Frank R. Brown, Adams Drive, Bethel, Conn. 06801
Filed Apr. 23, 1970, Ser. No. 22,597
Term of patent 14 years
Int. Cl. D8—*02*
U.S. Cl. D8—58

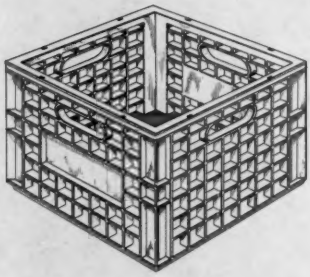


221,274
LUGGAGE LATCH
William J. Bouton, Jr., South Norwalk, Conn., assignor to The Excelsior Hardware Company, Stamford, Conn.
Filed May 5, 1970, Ser. No. 22,823
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—122

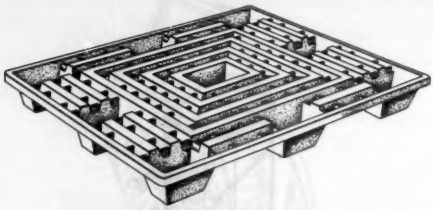


221,275
DISPENSING CONTAINER FOR LIQUIDS
Peter B. Hebblethwaite, Ashford, England, assignor to Graviner (Colnbrook) Limited, London, England
Filed Apr. 15, 1970, Ser. No. 22,433
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—9

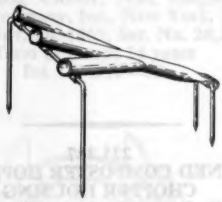
221,276
CRATE FOR MATERIAL HANDLING
Houston Rehrig, 3730 E. 26th St., Los Angeles, Calif. 90023
Filed Feb. 19, 1970, Ser. No. 21,503
Term of patent 14 years
Int. Cl. D9—*05*
U.S. Cl. D9—177



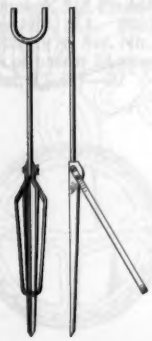
221,277
PALLET
Thomas P. Wharton, Neenah, Wis., assignor to Menasha Corporation, Neenah, Wis.
Filed Aug. 13, 1970, Ser. No. 24,478
Term of patent 14 years
Int. Cl. D12—*14*
U.S. Cl. D14—3



221,278
FINSHING POLE ANCHOR
Travis R. Wright, 80 Miller Ave., Dayton, Ohio 45427
Filed Apr. 24, 1970, Ser. No. 22,619
Term of patent 14 years
Int. Cl. D22—*08*
U.S. Cl. D22—22

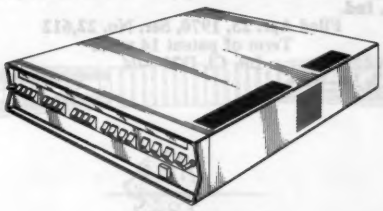


221,279
FISHING POLE HOLDER
Harold Erickson, 1455 McAllister Ave., Sacramento, Calif. 95822
Filed May 25, 1970, Ser. No. 23,136
Term of patent 14 years
Int. Cl. D22—*08*
U.S. Cl. D22—22

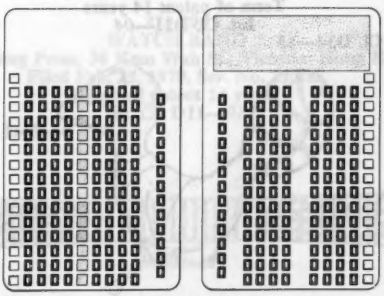


221,280
FISH LURE
Clarence S. Turbeville and Ike J. Walker, Gainesville, Tex., assignors to Bomber Bait Company, Gainesville, Tex.
Filed Nov. 17, 1969, Ser. No. 20,154
Term of patent 14 years
Int. Cl. D22—*07*
U.S. Cl. D22—28

221,281
DIGITAL COMPUTER
Richard F. Gonzales, Anaheim, Calif., assignor to Monitor Data Corporation, Irvine, Calif.
Filed May 1, 1970, Ser. No. 22,772
Term of patent 7 years
Int. Cl. D14—*02*
U.S. Cl. D26—5



221,282
DATA RECORD CARD FOR RECORD CARD CONTROLLED APPARATUS
Daniel L. Miller and Terry B. Prince, Indianapolis, Ind., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill and Berkeley Heights, N.J.
Continuation-in-part of design application Ser. No. 17,767, June 4, 1969, which is a continuation-in-part of design application Ser. No. 11,273, Apr. 3, 1968, both abandoned. This application Jan. 19, 1970, Ser. No. 20,995
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—14



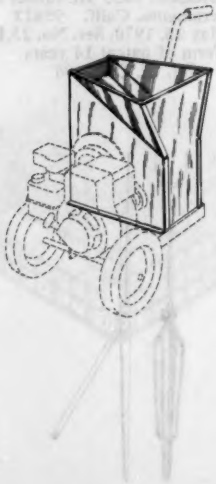
221,283
ANIMAL FIGURE SEAT FOR PLAYGROUND APPARATUS
Steven A. Henning and Philip G. Miller, Anderson, Ind., assignors to American Playground Device Co., Anderson, Ind.
Filed Apr. 23, 1970, Ser. No. 22,593
Term of patent 14 years
Int. Cl. D21—*04*
U.S. Cl. D34—15

221,284
ANIMAL FIGURE SEAT FOR PLAYGROUND APPARATUS
Steven A. Henning and Philip G. Miller, Anderson, Ind., assignors to American Playground Device Co., Anderson, Ind.
Filed Apr. 23, 1970, Ser. No. 22,612
Term of patent 14 years
Int. Cl. D21—*04*
U.S. Cl. 34—15

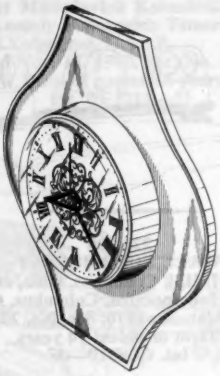
221,285
ANIMAL FIGURE SEAT FOR PLAYGROUND APPARATUS
Steven A. Henning and Philip G. Miller, Anderson, Ind., assignors to American Playground Device Co., Anderson, Ind.
Filed Apr. 23, 1970, Ser. No. 22,613
Term of patent 14 years
Int. Cl. D21—*04*
U.S. Cl. D34—15

221,286
DRINKING VESSEL
John W. Kern, Jr., 733 Coral Tree Drive, West Covina, Calif. 91790, and Frank R. Morgan, 528 S. Barrance, Covina, Calif. 91722
Filed May 21, 1970, Ser. No. 23,081
Term of patent 7 years
Int. Cl. D7—*01*
U.S. Cl. D36—8

221,287
COMBINED COMPOSTER HOPPER AND CHOPPER HOUSING
Edward W. Enters, Fredonia, Wis., assignor to Gilson Bros. Co., Plymouth, Wis.
Filed Nov. 28, 1969, Ser. No. 20,305
Term of patent 14 years
Int. Cl. D15—*03*
U.S. Cl. D40—1



221,288
CLOCK OR SIMILAR ARTICLE
Arthur M. Felske, Westport, Conn., assignor to General Electric Company
Filed July 17, 1970, Ser. No. 23,994
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D42—7



221,289
CHRONOGRAPH
Egbert VanHaaften, Closter, N.J., assignor to Bulova Watch Company, Inc., New York, N.Y.
Filed Nov. 20, 1969, Ser. No. 20,203
Term of patent 14 years
Int. Cl. D10—*02*
U.S. Cl. D42—8

221,290
DISH
Karl Wiedemann, 519 Fireside Lane, Cherry Hill, N.J. 08034
Filed May 25, 1970, Ser. No. 23,205
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D44—15

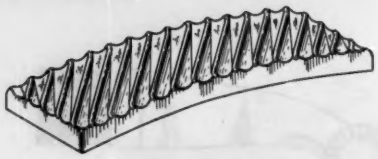
221,291
COMBINED PASTRY BRUSH, CRIMPING WHEEL AND EDGE CUTTER
Herbert G. Futter, Whately, Mass., assignor to Kellogg Brush Manufacturing Co., Easthampton, Mass.
Filed Aug. 29, 1969, Ser. No. 18,923
Term of patent 14 years
Int. Cl. D7—*99*
U.S. Cl. D44—29

221,292
WATCH BAND
Yuen Sang Poon, 36 Kam Wah St., Victoria, Hong Kong
Filed Feb. 25, 1970, Ser. No. 21,626
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D45—4

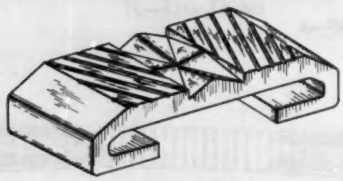
221,293
WATCH BAND
Yuen Sang Poon, 36 Kam Wah St., Victoria, Hong Kong
Filed Feb. 25, 1970, Ser. No. 21,627
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D45—4

221,294
WATCH BAND
Yuen Sang Poon, 36 Kam Wah St., Victoria, Hong Kong
Filed Feb. 25, 1970, Ser. No. 21,628
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D45—4

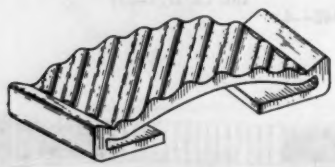
221,295
LINK CHAIN FOR A BRACELET OR SIMILAR ARTICLE
Yuen Sang Poon, 36 Kam Wah St., Hong Kong
Filed Apr. 24, 1970, Ser. No. 22,628
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D45—4



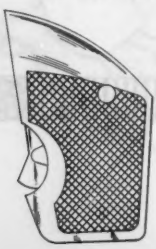
221,296
LINK CHAIN FOR A BRACELET OR SIMILAR ARTICLE
Yuen Sang Poon, 36 Kam Wah St., Hong Kong
Filed Apr. 24, 1970, Ser. No. 22,626
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D45—4



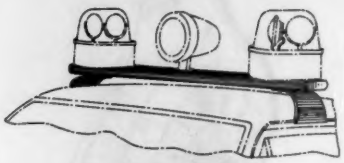
221,297
LINK CHAIN FOR A BRACELET OR SIMILAR ARTICLE
Yuen Sang Poon, 36 Kam Wah St., Hong Kong
Filed Apr. 24, 1970, Ser. No. 22,627
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D45—4



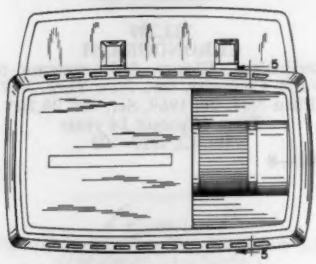
221,298
FLASHLIGHT
Joseph G. Bacevius, Bridgeport, Conn., assignor to Paul G. Garrity, Stamford, Conn.
Filed Jan. 6, 1970, Ser. No. 20,783
Term of patent 14 years
Int. Cl. D26—*04*
U.S. Cl. D48—24



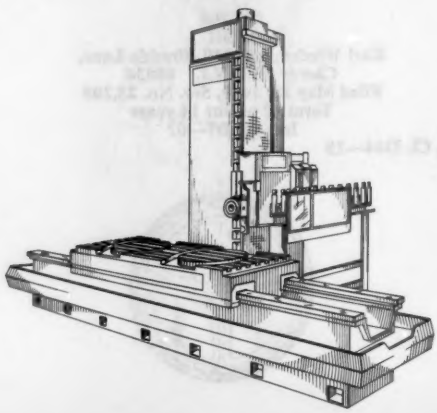
221,299
SUPPORT BAR FOR VEHICLES
Oliver John Burland, 214 Rugley Road, Western Springs, Ill. 60558
Filed Dec. 22, 1969, Ser. No. 20,590
Term of patent 14 years
Int. Cl. D12—*99*; D29—*99*
U.S. Cl. D48—32



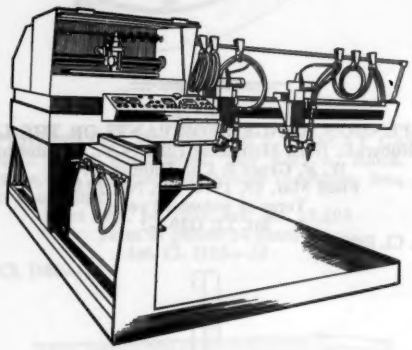
221,300
WALL THERMOSTAT
Frederick M. Hill, Columbus, Ohio, assignor to Ranco Incorporated, Columbus, Ohio
Filed Mar. 30, 1970, Ser. No. 22,098
Term of patent 14 years
Int. Cl. D10—*07*
U.S. Cl. D52—7



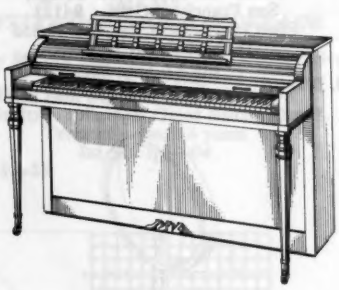
221,301
MACHINING CENTER
Brooks Stevens, Fox Point, Wis., assignor to Kearney & Trecker Corporation, West Allis, Wis.
Filed Apr. 27, 1970, Ser. No. 22,652
Term of patent 14 years
Int. Cl. D15—*05*
U.S. Cl. D54—14



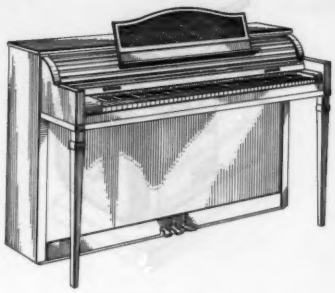
221,302
MACHINE FOR GAS-CUTTING OF SHEET METAL
Shimon Abramovich Vainer, 43 Logovskaya Str.; Valentin Semenovich Sigarev, 17 Tsimlyanskaya; Savely Abramovich Vainer, 10 Greodnenskaya; Nikita Timofeevich Prosvirov, 21 Pr. Lenina; Solomon Avramovich Zanberg, 4 Daugavskaya; Vadim Anatolievich Usoltsev, 9 Tsimlyanaskaya; Jury Ivanovich Lomakin, 16 Pr. Lenina; Dmitry Nikolaevich Ruze, Petrogradskaya Str. 20; Feofilakt Miltiadovich Koimshidi, 14 ulitsa Pushkina; and Anatoly Fedorovich Temerev, 9 Tsimlyanaskaya, all of Volgograd, U.S.S.R.
Filed Nov. 14, 1969, Ser. No. 20,099
Term of patent 14 years
Int. Cl. D15—*05*
U.S. Cl. D55—1



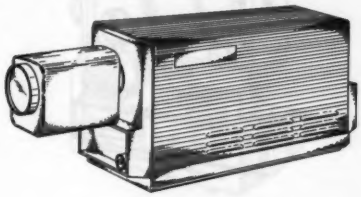
221,303
PIANO
Winsor D. White, Jr., Blowing Rock, N.C., assignor to D. H. Baldwin Company, Cincinnati, Ohio
Filed Feb. 24, 1970, Ser. No. 21,571
Term of patent 14 years
Int. Cl. D17—*01*
U.S. Cl. D56—9



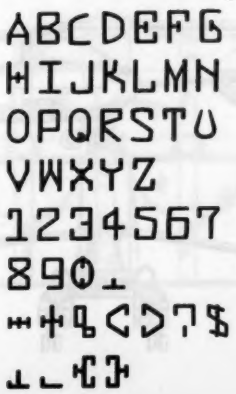
221,304
PIANO
Winsor D. White, Jr., Blowing Rock, N.C., assignor to D. H. Baldwin Company, Cincinnati, Ohio
Filed Feb. 24, 1970, Ser. No. 21,574
Term of patent 14 years
Int. Cl. D17—*01*
U.S. Cl. D56—9



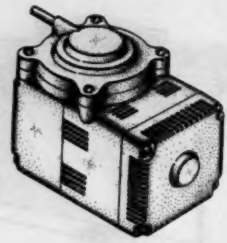
221,305
TELEVISION CAMERA OR SIMILAR ARTICLE
James W. Fitzgibbons, Palo Alto, and Kellogg Fleming and Gene Tepper, San Francisco, Calif., assignors to Sylvania Electric Products Inc.
Filed June 29, 1970, Ser. No. 23,745
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D61—1



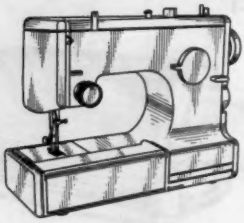
221,306
FONT OF TYPE
Harry L. Preble, Mason, N.H., assignor to Viatron Computer Systems Corporation, Bedford, Mass.
Filed Apr. 23, 1970, Ser. No. 22,588
Term of patent 14 years
Int. Cl. D18—*04*
U.S. Cl. D64—12



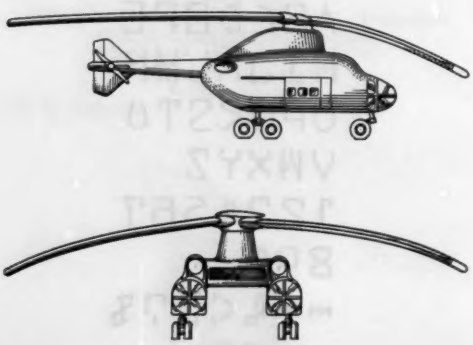
221,307
PUMP
Kenneth G. Bills, Trotwood, Ohio, assignor to TRW Inc., Cleveland, Ohio
Filed Apr. 15, 1970, Ser. No. 22,431
Term of patent 14 years
Int. Cl. D15—*02*
U.S. Cl. D65—1



221,308
SEWING MACHINE
Kenneth Grange, London, England, assignor to Maruzen Mishin Kabushiki Kaisha (Maruzen Sewing Machine Co., Ltd.), Sata, Moriguchi, Osaka Prefecture, Japan
Filed May 4, 1970, Ser. No. 22,799
Term of patent 14 years
Int. Cl. D15—*09*
U.S. Cl. D70—1



221,309
HELICOPTER
Roger L. Gamaunt, Manhattan Beach, Calif., assignor to Hughes Tool Company, Aircraft Division, Culver City, Calif.
Filed Feb. 6, 1970, Ser. No. 21,310
Term of patent 14 years
Int. Cl. D12—*07*
U.S. Cl. D71—1



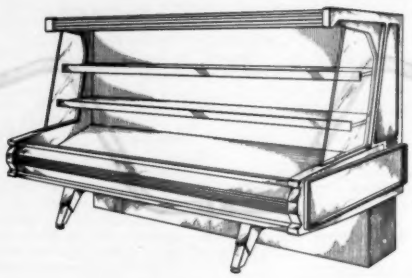
221,310
AIRCUSHION VEHICLE
Harry A. Laufman, 1510 E. Colorado Blvd., Glendale, Calif. 91204
Filed Mar. 16, 1970, Ser. No. 21,914
Term of patent 14 years
Int. Cl. D12—*13*
U.S. Cl. D71—1

221,311
SUSPENSION HANGER FOR PANTS OR THE LIKE
Robert L. Hart, Manhasset Hills, N.Y., assignor to W. R. Grace & Co., Duncan, S.C.
Filed Mar. 19, 1970, Ser. No. 21,968
Term of patent 14 years
Int. Cl. D20—*2*
U.S. Cl. D80—8

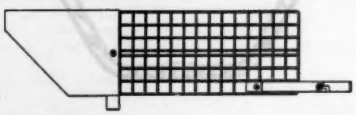
221,312
ORNAMENT DISPLAY SUPPORT
Arthur E. Court, 601 Ortega, San Francisco, Calif. 94122
Filed Jan. 9, 1970, Ser. No. 20,856
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D80—9

221,313
REFRIGERATED SELF-SERVICE DISPLAY CASE
Steven J. Toth, Kendallville, and Karl A. Emch, La Grange, Ind., assignors to Streater Industries, Inc., Albert Lea, Minn.
Filed Sept. 23, 1969, Ser. No. 19,267
Term of patent 14 years
Int. Cl. D15—*10*
U.S. Cl. D80—11

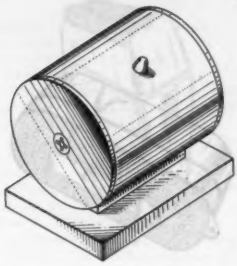
221,314
REFRIGERATED SELF-SERVICE DISPLAY CASE
Steven J. Toth, Kendallville, and Karl A. Emch, La Grange, Ind., assignors to Streater Industries, Inc., Albert Lea, Minn.
Filed Sept. 24, 1969, Ser. No. 19,292
Term of patent 14 years
Int. Cl. D15—*10*
U.S. Cl. D80—11



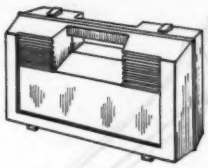
221,315
SAFETY GUARD FOR A COOKER OR COOKING STOVE
Rodney Stanley Landau, 13 Friern Mount Drive, London N. 20, England
Filed Feb. 24, 1970, Ser. No. 21,573
Claims priority, application Great Britain Oct. 3, 1969
Term of patent 14 years
Int. Cl. D7—*04*
U.S. Cl. D81—25



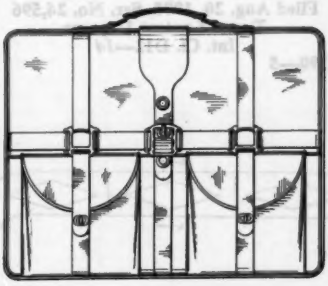
221,316
DEFIBRILLATOR TESTING DEVICE
Robert H. Dempsey, Napa, Calif., assignor to Neurodyne-Dempsey, Inc., Napa, Calif.
Filed Apr. 13, 1970, Ser. No. 22,395
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D83—1



221,317
STORAGE CASE FOR POWER TOOLS
Richard Muller, Highland Park, Ill., assignor to Imperial Marketing Ltd.
Filed Apr. 9, 1970, Ser. No. 22,353
Term of patent 14 years
Int. Cl. D3—*99*
U.S. Cl. D87—1



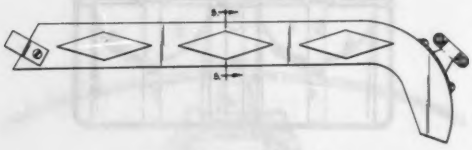
221,318
LUGGAGE BAG
Leslie Marshall, 15 Pine St., Woodmere, N.Y. 11598
Filed Jan. 28, 1970, Ser. No. 21,123
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D87—5



221,319
UMBRELLA HANDLE
Richard Zimmerman, Leichlingen, Rhineland, Germany, assignor to W. Bauermann & Sohne G.m.b.H., Hilden, Rhineland, Germany
Filed Apr. 15, 1970, Ser. No. 22,455
Claims priority, application Germany Nov. 12, 1969
Term of patent 14 years
Int. Cl. D3—*03*
U.S. Cl. D88—3

221,320
BICYCLE CHAINGUARD
Charles E. Kerr, Little Rock, Ark., assignor to AMF Incorporated
Filed June 3, 1970, Ser. No. 23,288
Term of patent 14 years
Int. Cl. D12—*14*
U.S. Cl. D90—5

221,321
CHAIN GUARD FOR A BICYCLE
Norman W. Post, P.O. Box 230, Fire Road, Pleasantville, N.J. 08232
Filed Aug. 20, 1970, Ser. No. 24,596
Term of patent 14 years
Int. Cl. D12—*14*
U.S. Cl. D90—5



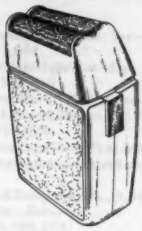
221,322
HANDLEBAR
Carlton P. Pawsat and Robert F. Humlong, Maysville, Ky., assignors to Wald Manufacturing Company, Inc., Maysville, Ky.
Filed June 24, 1970, Ser. No. 23,645
Term of patent 14 years
Int. Cl. D12—*14*
U.S. Cl. D90—11

221,323
HANDLEBAR
Carlton P. Pawsat and Robert F. Humlong, Maysville, Ky., assignors to Wald Manufacturing Company, Inc., Maysville, Ky.
Filed June 29, 1970, Ser. No. 23,732
Term of patent 14 years
Int. Cl. D12—*14*
U.S. Cl. D90—11

221,324
HANDLEBAR
Carlton P. Pawsat and Robert F. Humlong, Maysville, Ky., assignors to Wald Manufacturing Company, Inc., Maysville, Ky.
Filed June 29, 1970, Ser. No. 23,733
Term of patent 14 years
Int. Cl. D12—*14*
U.S. Cl. D90—11

221,325
HANDLEBAR
Carlton P. Pawsat and Robert F. Humlong, Maysville, Ky., assignors to Wald Manufacturing Company, Inc., Maysville, Ky.
Filed June 29, 1970, Ser. No. 23,734
Term of patent 14 years
Int. Cl. D12—*14*
U.S. Cl. D90—11

221,326
SHAVER
Hermann R. Schaefer, Bridgeport, Conn., assignor to Sperry Rand Corporation, New York, N.Y.
Filed May 28, 1970, Ser. No. 23,192
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D95—3



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 27TH DAY OF JULY, 1971

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Abbat, Jean Pierre, to Brutoco Development Co. Amusement device. 3,594,925, Cl. 35-19.

Abbott, James H.; Harakas, Nick K.; and Latinen, George A., to Monsanto Company. Continuous condensation polymerization finisher. 3,595,627, Cl. 23-285.

Abbott Laboratories: *See—*
Suyeoka, George M.; and Katerndahl, Dean R., 3,595,230.

Abbott, Samuel, to Venavco, Inc. Automatic shutoff valve. 3,595,261, Cl. 137-403.

Abitibi Corporation: *See—*
Branson, Thomas A.; Huehmer, Joachim E.; and Klasell, Thomas A., 3,594,979.

Ables, Eugene O. Roller attachments to hydraulic back hoe. 3,595,411, Cl. 214-145.

Abos, Ralph L., to Anti-Pollution Devices, Inc., mesne. Filter apparatus. 3,595,397, Cl. 210-232.

Abos, Ralph L.; and Stuewe, Carl A., to Anti Pollution Devices, Inc. Filter. 3,595,399, Cl. 210-266.

Abrahamson, Henry M.: *See—*
Lind, Jack H.; and Abrahamson, Henry M.,3,595,682.

Abrecht, William A., to Dart Industries, Inc. Banding apparatus. 3,594,975, Cl. 53-3.

ACF Industries, Incorporated: *See—*
Rollins, Dallas W., 3,594,847.

Acumeter Laboratories, Inc.: *See—*
McIntyre, Donald B.; and McIntyre, Frederic S., 3,595,204.

Adachi, Toshiyuki: *See—*
Tsukuma, Shin; and Adachi, Toshiyuki,3,595,493.

Adams, Charles T.; and Fruit, Richard E., to Shell Oil Company. Process for stabilization of diolefin-containing hydrocarbons. 3,595,780, Cl. 208-216.

Adams, Frederick John, to Cam Gears (Luton) Limited. Implement carrying linkage means. 3,595,319, Cl. 172-9.

Adams, Paul E.: *See—*
Zimmerman, Rhoderick H., 3,596,076.

Adams, Richard C.; Monahan, Thomas J.; and Picotte, George A., to Schjeldahl, G. T., Company. Apparatus for nesting bags. 3,595,139, Cl. 93-33.

Adams, Robert B., to Moore Products Co. Diverting valve. 3,595,259, Cl. 137-81.5

A.D.C.O. Mfg. Co., Inc.: *See—*
Landers, Adrian L., 3,595,284.
Landers, Adrian L.; and Byrd, Commodore B., 3,595,288.

Adcock, Edmund Philip; Sutcliffe, Jeffrey Herbert; and Woodward, Colin Charles, to U.G. Closurers and Plastics Limited. Closures for containers. 3,595,418, Cl. 215-40.

Adler, Karl; and Ducommun, Georges, to Biviator S.A. Drill spindle drive for high speeds. 3,595,096, Cl. 74-206.

AEG-Elotherm GmbH: *See—*
Seulen, Gerhard; and Reinke, Friedhelm, 3,596,037.

Afonso, Adriano, to Schering Corporation. Process for the preparation of 14βhydroxy-17- keto-15-androstenes and novel intermediates produced thereby. 3,595,883, Cl. 260-397.45

Agfa-Gevaert Aktiengesellschaft: *See—*
Engelsmann, Dieter, 3,595,150.
Maas, Dieter; and Schmieri, Richard, 3,595,151.

Agulnek, Harry, to Singer Company, The. Retractable guard cam for pattern wheel knitting apparatus. 3,595,033, Cl. 66-50.

Aichenegg, Paul C.: *See—*
Emerson, Carl D.; and Aichenegg, Paul C.,3,595,915.

Aigner, G. J., Company: *See—*
Jones, Charles E.; and Gruenhut, Joseph H., 3,595,433.

Air Preheater Company, Inc., The: *See—*
Anderson, William M.; Bakker, Lubertus; and Stockman, Richard F., 3,595,181.
Carr, George P.; and Hazzard, Noel D., 3,594,992.

Air Reduction Company, Inc.: *See—*
Newcombe, Robert, 3,595,226.

Ajax Magnethermic Corporation: *See—*
Ross, Nicholas V.; and Jennings, Reuhl E., 3,596,036.
Shearman, Wilbur E., 3,595,979.

Ajinomoto Co., Inc.: *See—*
Ariyoshi, Yasuo; and Sato, Naotake, 3,595,912.
Shimazaki, Hideo; Tsukamoto, Shuji; and Komata, Yasushi, 3,595,678.

Akai, Norio; and Taniguchi, Tomizo, to Hitachi Maxell, Ltd. Magnetic recording tape. 3,595,694, Cl. 117-235.

Akashi, Tsuneo: *See—*
Tsubouchi, Norio; Takahashi, Masao; Ohno, Tomeji; and Akashi, Tsuneo,3,595,795.

Aktiebolaget Kanthal: *See—*
Stenfors, Erik; Malm, Ewert; and Magnusson, Bengt, 3,595,978.

Aktiebolaget Svenska Kullagerfabriken: *See—*
Lemor, Pierre, 3,595,094.

Aktiebolaget Svenska Kullaterfabriken: *See—*
Skold, Erik Axel, 3,595,549.

Aktiengesellschaft Brown, Boveri & Cie: *See—*
Faust, Werner; and Langer, Jurgen, 3,596,166.
Floessel, Dieter, 3,596,029.

Akustische u. Kino-Gerate Gesellschaft m.b.H.: *See—*
Fidi, Werner; and Weingartner, Bernhard, 3,595,998.

Alaskaug, Inc.: *See—*
Stull, William T.; and Story, Earl A., 3,595,529.

Alcon Metal Products, Inc.: *See—*
De Vito, Albert P., 3,596,233.

Aldrich, Paul E., to Du Pont de Nemours E. I., and Company. Method of using 4-arylbicyclo [2.2.2] octyl urethans as antidepressants and compositions thereof. 3,595,962, Cl. 424-274.

Alexander, Inc.: *See—*
Tibbals, Edward Camp, Jr.; and Temple, Trevor, 3,596,060.

Alexandrovich, George, to Fairchild Sound Equipment Corporation. Gain switching circuits. 3,596,011, Cl. 179-170.2

Alfons Haar: *See—*
Lorentz, Werner, 3,595,521.

Alford, Andrew. Electrical measuring apparatus for providing an output signal at an output branch characteristic of the relationship of impedances presented at first and second side branches at the frequency of energy applied at an input branch. 3,596,175, Cl. 324-58.

Allen, Dorothy K., to Noble, F. H., & Company. Multiple and selectable parts trophy construction. 3,595,727, Cl. 161-17.

Allen Electric and Equipment Company: *See—*
Heese, William E., 3,595,193.

Allen-Bradley Company: *See—*
Nelson, Terrance D., 3,596,112.

Alley, Thomas R. Gas lift valve. 3,595,315, Cl. 166-224.

Allied Chemical Corporation: *See—*
Ameen, Jameil; and Furbush, Seymour A., 3,594,985.
Beckham, Leland J., 3,595,609.
Birenzvige, Amnon; and Weedon, Gene C., 3,595,936.
Crescentini, Lamberto, 3,595,935.
Gilbert, Everett E.; Herz, Jack L.; Murray, John J.; Price, Alson K.; and Sweeney, Richard F., 3,595,689.
Klingelhoefer, William C., 3,595,613.
Mason, Paul J.; Moore, William P.; and Ulmer, Harry E., 3,595,639.
Pietrusza, Edward W.; and Pendersen, Jack R., 3,595,872.
Sweeney, Richard F.; and Liauw, Koei-Liang, 3,595,886.

Allis-Chalmers Manufacturing: *See—*
Baude, John, 3,595,699.

Allis-Chalmers Manufacturing Company: *See—*
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Allison, William M.; and Vail, Atlee, to Sprague Electric Company. Capacitor with laminar electrode. 3,596,152, Cl. 317-258.

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Bogdanov, Boris Vladimirovich; Starostin, Valery Nikolaevich; and Erlykin, Vitaly Ivanovich. Pusher vessel adapted for towing by pushing. 3,595,197, Cl. 114-235.

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Boulay, Henri A.; and Silva, Joseph, to Bostitch, Division of Textron, Inc. Carton aligning mechanism for conveyor. 3,595,369, Cl. 198-29.

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Bourque, Archille O., to American & Efird Thread Mills, Inc. Method and apparatus for securing the end or tail of a textile strand to a wound package. 3,595,491, Cl. 242-18.

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Boyce, Joseph F.; Bernstein, Axel Vilhelm; and Carlen, Jan-Christer Henric Ovesson, to Sandvikens Jernverks Aktiebolag. Razor blade of a chromium containing steel. 3,595,643, Cl. 75-126.

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Brainard, Wallace E.; and Kirkham, Edward E., to Kearney & Trecker Corporation. Positional control system for a machine tool. 3,596,153, Cl. 318-574.

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Bray, Stewart V., to Ford Motor Company. Process for manufacturing colf sealed spark plugs. 3,594,883, Cl. 29-25.12

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Broling, Keith W., to Portec, Inc. Adjustable automobile frame loading system. 3,595,176, Cl. 105-367.

Brookman, Roger S.; and Phillippi, John F., to American Precision Industries Inc. Vacuum unloading valve for dust collectors. 3,595,266, Cl. 137-519.

Brooks, Gregory W., to Star Dental Manufacturing Co., Inc. Foot control using rotatable cover plate for dental equipment. 3,596,102, Cl. 250-215.

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Brown, Edwin Ian Gilbert; Jack, James; and Vickers, Edward Jervis, to Imperial Chemical Industries Limited. Organosilicon compounds. 3,595,894, Cl. 260-448.2

Brown, George S.; and Hill, Joe E. Box dumper. 3,595,414, Cl. 214-313.

Bruce, Burnett D.; and Seiler, Heinz, to Eagle-Picher Industries, Inc. Method and compositions for removing phosphates from water. 3,595,785, Cl. 210-59.

Bruce, John McNichol, to Distington Engineering Company Limited. Continuous crystallising equipment. 3,595,625, Cl. 23-273.

Bruckl, Franz Xavier. Safety ski poles provided with snowheads. 3,595,596, Cl. 280-11.37

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Bucko, Edward P. Checker game apparatus. 3,595,580, Cl. 273-131.

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Budde, Paul B.; and Tolkmith, Henry, to Dow Chemical Company, The. Imidazolyl phosphinates and phosphinothioates. 3,595,873, Cl. 260-309.

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Buford, Wesley E.; and Buford, Charles G., to Rayford Industries, Inc., mesne. Fluid dispensing valve. 3,595,445, Cl. 222-213.

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Burcenski, Michael J. Boomerang shaped projectile and rope target therefor. 3,595,578, Cl. 273-95.

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Burnbaum, Jack. Rotating ornament. 3,594,934, Cl. 40-33.

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Burton, Robert F. Blending device. 3,595,534, Cl. 259-85.

Burwell, Neil Worrall; and Di Meo, Franklin Roosevelt, to RCA Corporation. Rotatable shaft. 3,595,505, Cl. 248-43.

Busche, Kenneth A. Programmed illumination of panel display sections. 3,596,016, Cl. 200-46.

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Butera, Emanuel Victor, to International Business Machines Corporation. Energy field probe of consistent attitude capable of moving with three degrees of freedom. 3,596,177, Cl. 324-72.

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Butler, Donald E., to Parke, Davis & Company. 1-Amino-3-aminoalkyl-3-phenyloxindole compounds. 3,595,866, Cl. 260-293.4

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Ciemochowski, Michael F., to Holley Carburetor Company. Multichannel frost ice and snow detecting device. 3,596,264, Cl. 340-234.

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Coen, Ernesto, to Pilkington Brothers Limited. Toughening glass in sheet form. 3,595,725, Cl. 161-1.

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Cohen, Jerome M., to Lubrizol Corporation, The. Basic, sulfurized salicylates and method for their preparation. 3,595,791, Cl. 252-33.6

Cohen, Martin J.; Carroll, David I.; and Wernlund, Roger F., to Franklin GNO Corporation. Time-of-flight mass separator having a flawing gas stream perpendicular to an ion drift field for increased resolution. 3,596,088, Cl. 250-41.9

Cohn, Johann Gunther E.; and Pfefferle, William C., to Engelhard Minerals & Chemicals Corporation. Steam reforming with preliminary hydrodesulfurization. 3,595,805, Cl. 252-373.

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Coshburn, Henry Selden, Jr., to Mobil Oil Corporation. Grease resistant to oil separation at elevated temperature. 3,595,789, Cl. 252-28.

Coshow, Chester L. Cleaning apparatus. 3,594,849, Cl. 15-321.

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Foster, George N., to Union Carbide Corporation. Ethylene interpolymers having improved slip and anti-blocking properties. 3,595,827, Cl. 260-32.6

Foster, Keith, to National Research Development Corporation. Transducer for producing mechanical oscillations. 3,595,133, Cl. 91-390.

Fourquier, Louis. Apparatus for holding chuck jaws for shaping. 3,594,960, Cl. 51-217.

Fowler, Kenneth A., to Panametrics Inc. Ultrasonic sensing system. 3,595,069, Cl. 73-67.2

Fox, Harold L.; and Clark, Ruel R., to I-T-E Imperial Corporation. Temperature responsive switch. 3,595,262, Cl. 137-457.

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Francis, Richard J.; and Francis, Clara A. Multielement radio-frequency antenna structure having helically coiled conductive elements. 3,596,273, Cl. 343-873.

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French, Lionel John Bryant Rushent, to Sulby Engineering Development Company Limited, The. Book binding machinery. 3,594,837, Cl. 11-1.

French State, represented by the Minister of Armed Forces, Ministerial Delegation for Armaments, Technical Direction of Land Weapons: *See—*
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Frisch, Erling; Andrews, Harry N.; and Braun, Howard E., to Westinghouse Electric Corporation. Nuclear reactor control device. 3,595,748, Cl. 176-36.

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Frolovtsev, Vasily Alexandrovich: *See—*
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Fujii, Sadao: *See—*
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Fujimoto, Sakae, to Kabushiki Kaisha Ricoh. Shutter cocking and film metering device for a camera. 3,595,149, Cl. 95-31.

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Garland, Percy A. Tamper-proof shoplifting alarm. 3,596,265, Cl. 340-280.

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General Mills, Inc.: *See—*
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Gerlach, Joanne C.; and Robinson, Ian D., to Little, Arthur D., Inc. Non-silver direct positive dye bleach-out system using polymethine dyes and colored activators. 3,595,658, Cl. 96-48.

Gerlach, Joanne C.; Robinson, Ian D.; and Jordan, Kenneth D., to Little, Arthur D., Inc. Non-silver direct positive dye bleach-out system using indigoid dyes and colored activators. 3,595,659, Cl. 96-48.

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Robinson, Ian D.; and Gerlach, Joanne C.,3,595,657.

Gerow, Clare W., to Du Pont de Nemours E. I., and Company. Hydrolyzed ethylene/vinyl acetate copolymer as oxygen barrier layer. 3,595,740, Cl. 161-254.

Gerrish, Oliver B., to Southwestern Bell Telephone Company. Telephone cable having applied thereto a tacky squirrel repellent whose adhesive tack exceeds its cohesive tack. 3,595,692, Cl. 117-218.

Gerstner, Ferdinand: *See—*
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Gettinger, John Francis. Adjustable holding device. 3,595,559, Cl. 269-77.

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Gilbert, Dixie E., to Phillips Petroleum Company. Severing blade with beveled gripping edge. 3,595,116, Cl. 83-176.

Gilbert, Everett E.; Herz, Jack L.; Murray, John J.; Price, Alson K.; and Sweeney, Richard F., to Allied Chemical Corporation. Substrate treated with a fluorine-containing aromatic compound. 3,595,689, Cl. 117-121.

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Gilmoure, Harold J.; and Comiskey, William B., to Sales Promotion Products, Inc. A-frame, tire supported signboard. 3,595,509, Cl. 248-175.

Giraud, Francois Louis, to Societe de l'"Aerotrain'. Track shunting system for movable parts following a guiding track. 3,595,173, Cl. 104-23.

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Girola, Angelo, to Duplomatic Meccanica Applicazioni Oleodinamiche. Hydraulic tracer mechanism adapted for use with machine tools in general. 3,595,519, Cl. 251-3.

Givord, Jean-Pierre: *See—*
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Glaser, Jerome Ira; and Chu, Lan J. Electromagnetic waveguide. 3,596,214, Cl. 333-95.

Glaser, Robert: *See—*
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Goglio, Luigi. Flexible sealed container provided with a one-way safety valve. 3,595,467, Cl. 229-62.5

Gold, Derek Lawrence, to Gib Precision Limited. Collets. 3,595,593, Cl. 279-57.

Gold, Nicholas, to Polaroid Corporation. Photographic film assemblage. 3,595,661, Cl. 96-76.

Goldberg, Isaak Mironovich; Elman, Vyacheslav Borisovich; Volkov, Valentin Mikhailovich; Gorsky, Jurry Efimovich; Shugaev, Anatoly Pavlovich; Ostrovsky, Edgar Borisovich; Mochalin, Lev Vasilievich; Bekker, Yakov Shabsovich; Fokin, Valentin Petrovich; and Braslavets, Evgeny Petrovich. Device for compensating for grinding wheel wear. 3,594,957, Cl. 51-165.88

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Gooch, William E.Bowler's finger support and ball control device. 3,595,575, Cl. 273-54.

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Gottwald, Johannes F., to Teletype Corporation. Liquid metal recorder. 3,596,285, Cl. 346-75.

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Graham, Andrew Stuard, Jr., to Fleck Industries, Inc. Cup dispenser. 3,595,435, Cl. 221-310.

Graham, Thomas Gilmour: *See—*
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Grahn, Allen R., to Northwestern University. Fluid flow velocity measuring apparatus. 3,595,079, Cl. 73-204.

Granda, Gerald L., to Allis-Chalmers Manufacturing Company. Track pin and bushing joint seal. 3,595,572, Cl. 277-92.

Grantham, Daniel H.; Quinn, Daniel J.; and Paradis, Edouard L., to United Aircraft Corporation. Sputtering apparatus with sealed cathode-shield chamber. 3,595,775, Cl. 204-298.

Gras, George, to International Lead Zinc Research Organization Inc. Method of treating cestodes with dibutyl lead esters. 3,595,964, Cl. 424-293.

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Gray, Claude W. Tube cutting tool. 3,595,313, Cl. 166-55.6

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Grettve, Karl Einar Lage, to Lilla Edets Pappersbruks Aktiebolag. Perforation machines. 3,595,117, Cl. 83-349.

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Gschwandtner, Eric, to Wurlitzer Company, The. Transfer function generator for providing a complex wave form of desired characteristics. 3,596,185, Cl. 328-28.

Guardian Packaging Corporation: *See—*
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Guigan, Jean Alexandre: *See—*
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Guild, Charles L.; and Goodman, Willard B. Pile drivers including multiple hammers with common anvils. 3,595,324, Cl. 173-101.

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Gulf Research & Chemical Company: *See—*
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Gulf Research & Development Company: *See—*
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Gunia, Adolph T.; and Mehringer, Andrew R. W. Replaceable cue tip mounting. 3,595,576, Cl. 273-70.

Gunther, Conrad J., to Dzus Fastener Co., Inc. Fastener having improved load-carrying capacity. 3,594,876, Cl. 24-221.

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Gurwicz, David; and Sloan, Albert E., to Ransomes, Sims & Jefferies Limited, and Sevcon Engineering Limited. Electrically operated differentially variable dual motor drive system. 3,596,154, Cl. 318-52.

Haase, John A., to Control Data Corporation. Four phase digital clock. 3,596,188, Cl. 328-62.

Haberkorn, Otto, to Walther-Bueromaschinen GmbH. Calculating machine with a device for rounding off an amount and for concelling decimal positions. 3,595,473, Cl. 235-63.

Hacker, Fritz. Armored vehicle float structure. 3,595,198, Cl. 115-1.

Hafler, David, to Dynaco, Inc. Transistorized amplifiers and protective circuits therefor. 3,596,199, Cl. 330-207.

Hagenbach, Robert J.; and Lenhard, Myron J., to Xerox Corporation. Electrostatographic developer. 3,595,794, Cl. 252-62.1

Hager, Nathaniel E., Jr., to Armstrong Cork Company. Food container heating system. 3,596,059, Cl. 219-432.

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Hahn, Rasso; and Mueller, Curt, to Sandoz Ltd., a/k/a Sandoz A.G. Monoazo dyestuffs containing a thiazolylmercato- alkylamino group. 3,595,852, Cl. 260-158.

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Holt, Gordon C., to Teddington Bellows Limited. Bellows. 3,595,049, Cl. 72-110.

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Kalwaites, Frank, to Johnson & Johnson. Method and apparatus for manufacturing split fiber webs for oriented plastic films. 3,595,454, Cl. 225-3.

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Kane, Richard E.; and Reese, Frank L., to Westinghouse Electric Corporation. Compressed-gas circuit interrupter having two component containing legs upstanding from a grounded U-shaped high pressure tank. 3,596,028, Cl. 200-148.

Kantorowicz, Josef Lejzor. Mounting frame. 3,594,969, Cl. 52-392.

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Kawamata, Yukio; and Yatsushiro, Kozo, to Matsushita Electric Industrial Co., Ltd. Manual hue and saturation controls for a color television receiver. 3,595,988, Cl. 178-5.4

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Kehl, William L., to Gulf Research & Chemical Company. Zinc chromium ferrite catalyst. 3,595,810, Cl. 252-468.

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Kimmig, Emil, to Deutsche Rhodiaceta AG. Process of surface saponifying cellulose- 2 1/2- acetate, and fabric made therefrom. 3,595,605, Cl. 8-130.

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Kimura, Takuhei; and Isigaki, Shinichi, to Iwatsu Electric Co., Ltd. Thermal apparatus for fixing thermoplastic resinous powder. 3,595,539, Cl. 263-6.

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Klayman, Daniel L.; and Gilmore, William Franklin, to United States of America, Army. 2-(Phenylalkylamino)ethanethio-sulfuric acids as antiradiation agents. 3,595,899, Cl. 260-453.

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Klingler, Karl A.; and Frey, Rudolf, to Schnellpressenfabrik Frankenthal Albert & Cie Aktiengesellschaft. Inking device for the forme cylinders of gravure printing presses. 3,595,168, Cl. 101-350.

Klopping, Hein L., to Du Pont de Nemours, E. I., and Company. Metal complexes of 2-benzimidazolecarbamic acid esters. 3,595,870, Cl. 260-299.

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Knippenberg, Wilhelmus Francisus; and Verspui, Gerrit, to U.S. Philips Corporation. Filter for separating superfluid helium. 3,595,788, Cl. 210-500.

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Koehler, Toivo, to United States of America, Air Force. Dual temperature apparatus for testing infrared radiation detectors. 3,596,096, Cl. 250-83.3

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Muller, Anton. Eisen-Und Drahtwerk Erlau AG. Connecting link for tire chain. 3,595,293, Cl. 152-243.

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Robinson, Ian D.; and Gerlach, Joanne C., to Little, Arthur D., Inc. Non-silver direct positive dye bleach-out system using indigoid dyes and colorless activators. 3,595,657, Cl. 96-48.
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Shorrock, Stanley; and Fish, Alan. Needle assembly for a tufting machine. 3,595,186, Cl. 112-79.

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Zucker, Edwin, to Xerox Corporation. Method of breaking particle agglomerates in the photo-electrophoretic imaging system. 3,595,772, Cl. 204-181.

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654	3,595,928	270– 57	3,595,560	278	3,596,114	320– 9	3,596,164	95	3,596,214		3,596,264
666	3,595,929	271– 9	3,595,561	303	3,596,115	321– 2	3,596,165	97	3,596,215	280	3,596,265
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672	3,595,932	46	3,595,564	17	3,596,118	27	3,596,168	335– 17	3,596,218		3,596,268
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683	3,595,920	53	3,595,566	61	3,596,120	323– 17	3,596,170	68	3,596,220	343– 18	3,596,270
825	3,595,934	57	3,595,567	67	3,596,122	24	3,596,171	185	3,596,221	731	3,596,271
857	3,595,935	89	3,595,568	166	3,596,121	45	3,596,172	336–129	3,596,222	792.5	3,596,272
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860	3,595,937	33	3,595,570	22	3,596,124	324– 17	3,596,174	320	3,596,224	346– 1	3,596,274
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876	3,595,940	273– 1.5	3,595,573	86	3,596,126	61	3,596,176	21	3,596,226		3,596,276
879	3,595,941	41	3,595,574	209	3,596,127	72	3,596,177	53	3,596,227	14	3,596,277
880	3,595,942	54	3,595,575	231	3,596,128	96	3,596,178	59	3,596,228	17	3,596,278
897	3,595,943	70	3,595,576	315– 3	3,596,129	103	3,596,179	61	3,596,229		3,596,279
900	3,595,944	80	3,595,577	39	3,596,130	158	3,596,180	74	3,596,230	30	3,596,280
943	3,595,945	95	3,595,578	.3	3,596,131	325– 55	3,596,181	96	3,596,231	34	3,596,281
261– 28	3,595,536	106.5	3,595,579	151	3,596,132	67	3,596,182	99	3,596,232	74	3,596,282
91	3,595,537	131	3,595,580	209	3,596,133	465	3,596,183	128	3,596,233		3,596,283
92	3,595,538	176	3,595,581	317– 2	3,596,134	478	3,596,184	214	3,596,234		3,596,284
263– 6	3,595,539	182	3,595,582	14	3,596,135	328– 28	3,596,185	217	3,596,235	75	3,596,285
19	3,595,540	191	3,595,583	47	3,596,137	39	3,596,186	266	3,596,236	86	3,596,286
21	3,595,541	274– 4	3,595,584	101	3,596,138	62	3,596,188	340– 25	3,596,237	101	3,596,287
	3,595,542	277– 58	3,595,585		3,596,139	63	3,596,187	46	3,596,238	424–117	3,595,954
32	3,595,543	92	3,595,572		3,596,140	72	3,596,189		3,596,239	121	3,595,955
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264– 29	3,595,946	169	3,595,587	112	3,596,142		3,596,191	61	3,596,241	199	3,595,957
42	3,595,947	206	3,595,588	123	3,596,143	165	3,596,192	62	3,596,242	225	3,595,958
94	3,595,948	235	3,595,589		3,596,144	185	3,596,193	64	3,596,243	248	3,595,959
130	3,595,950		3,595,590		3,596,145	329–104	3,596,194	67	3,596,244	263	3,595,975
146	3,595,949	279– 16	3,595,591	146	3,596,146	330– 1	3,596,195	146.1	3,596,245	267	3,595,960
211	3,595,951	47	3,595,592	230	3,596,147	4.9	3,596,197	147	3,596,246	273	3,595,961
235	3,595,952	57	3,595,593	234	3,596,136	11	3,596,196		3,596,247	274	3,595,962
290	3,595,953	117	3,595,594		3,596,148	59	3,596,198	149	3,596,248	288	3,595,963
266– 23	3,595,545	280– 11.35	3,595,595	235	3,596,149	207	3,596,199		3,596,249	293	3,595,964
33	3,595,546	.37	3,595,596		3,596,151	331– 75	3,596,200	167	3,596,250		

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